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IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
WASHINGTON, D. C.

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CONTENTS

SYMBOLS AND TERMINOLOGY; CONVENTIONS FOR DETERMINING MEDIAN VALUES

Beginning with data reported for January 1949, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Fifth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Stockholm, 1948, and given in detail on pages 2 to 10 of the report CRPL-F53, "Ionospheric Data," issued January 1949.

For symbols and terminology used with data prior to January 1949, see report IRPL-C61, "Report of International Radio Propagation Conference, Washington, 17 April to 5 May, 1944," previous issues of the F series, in particular, IRPL-F5, CRPL-F24, F33, F50, and report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

Following the recommendations of the Washington (1944) and Stockholm (1948) conferences, beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

In addition to the conventions for the determination of medians given in Appendix 5 of Document No. 293 E of the Stockholm conference, which are listed on pages 9 and 10 of CRPL-F53, the following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given on pages 2-9 of CRPL-F53 (Appendixes 1-4 of Document No. 293 E referred to above).

a. For all ionospheric characteristics:

Values missing because of A, B, C, F, L, M, N, Q, R, S, or T (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F38, page 9.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:
1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

Values missing because of W are counted:
1. For foF2, as equal to or less than the median when it is apparent that h'F2 is unusually high; otherwise, values missing because of W are omitted from the median count.
2. For h'F2, as equal to or greater than the median.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of G (no Es reflections observed, the equipment functioning normally otherwise) are counted as equal to or less than the median foE, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 51 and figures 1 to 102 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Australian Department of Supply and Shipping,
Bureau of Mineral Resources, Geology and Geophysics:
Watheroo, W. Australia

British Department of Scientific and Industrial Research,
Radio Research Board:
Lindau/Harz, Germany

Radio Wave Research Laboratory, Central Broadcasting Administration:
Chungking, China
Lanchow, China

All India Radio (Government of India), New Delhi, India:
Bombay, India
Delhi, India
Madras, India
Tiruchirapalli, India

Indian Council of Scientific and Industrial Research,
Radio Research Committee:
Calcutta, India

Electrical Communications Laboratory, Ministry of Communications:
Fukaura, Japan
Shibata, Japan
Tokyo, Japan
Wakkanai, Japan
Yamakawa, Japan

New Zealand Department of Scientific and Industrial Research:
Christchurch, New Zealand

Norwegian Defense Research Establishment, Kjeller per Lillestrom, Norway:
Oslo, Norway

South African Council for Scientific and Industrial Research:
Capetown, Union of S. Africa
Johannesburg, Union of S. Africa

National Bureau of Standards (Central Radio Propagation Laboratory):

- Baton Rouge, Louisiana (Louisiana State University)
- Boston, Massachusetts (Harvard University)
- Guam I.
- Huancayo, Peru (Instituto Geofisico de Huancayo)
- Maui, Hawaii
- Palmyra I.
- San Francisco, California (Stanford University)
- San Juan, Puerto Rico (University of Puerto Rico)
- Trinidad, British West Indies
- Washington, D. C.
- White Sands, New Mexico

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

a. Differences in scaling records when spread echoes are present.

b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot No.				
	1949	1948	1947	1946	1945
December		114	126	85	38
November		115	124	83	36
October		116	119	81	23
September	115	117	121	79	22
August	111	123	122	77	20
July	108	125	116	73	
June	108	129	112	67	
May	108	130	109	67	
April	109	133	107	62	
March	111	133	105	51	
February	113	133	90	46	
January	112	130	88	42	

IONOSPHERIC DATA FOR EVERY DAY AND HOUR AT WASHINGTON, D. C.

The data given in tables 52 to 63 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols and Terminology; Conventions for Determining Median Values." Beginning with September 1949, the data are taken at a new location, Ft. Belvoir, Virginia.

IONOSPHERE DISTURBANCES

Table 64 presents ionosphere character figures for Washington, D. C., during September 1949, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 65 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at the Sterling Radio Propagation Laboratory during September 1949.

Table 66 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless, Ltd., for various days in August and September 1949.

Table 67 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Platanos, Argentina, receiving station of the International Telephone and Telegraph Corporation for August 3, 1949.

Table 68 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Point Reyes, California, receiving station of RCA Communications, Inc., for several days in September and for October 2, 1949.

Table 69 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Riverhead, New York, receiving station of RCA Communications, Inc., for various days in September and October 1949.

Table 70 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, August 1949, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

The radio propagation quality figures are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner basically the same as that described in IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946. The scale conversions for each report are revised for use with the data beginning January 1948, and statistical weighting replaces what was, in effect, subjective weighting. Separate master distribution curves of the type described in IRPL-R31 were derived for the part of 1946 covered by each report; data received only since 1946 are compared with the master curve for the period of the available data. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. Each report is given a statistical weight which is the reciprocal of the departure from linearity. The half-daily radio propagation quality figure, beginning January 1948, is the weighted mean of the reports received for that period.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the cause, conditions may be reported as disturbed because of seasonal characteristics such as are particularly evident in the pronounced day and night contrast over North Pacific paths during the winter months, or because of improper frequency usage for the path and time of day in question. Insofar as possible, frequency usage is included in rating the reports. Where the actual frequency is not shown in the report to the CRPL, it has been assumed that the report is made on the use of optimum working frequencies for the path and time of day in question. Since there is a possibility that all the disturbance shown by the quality figures is not due to ionospheric storminess alone, care should be taken in using the quality figures in research correlations with solar, auroral, geomagnetic, or other data. Nevertheless, these quality figures do reflect a consensus of opinion of actual radio propagation conditions as found on any one half day in either of the two general areas.

AMERICAN AND ZÜRICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 71 presents the daily American relative sunspot number, R_A, computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of <u>all</u> observations received for each day. Details of the procedure are given in the Publication of the Astronomical Society of the Pacific, issued February 1949, in an article entitled "Reduction of Sunspot-Number Observations." The American relative sunspot number computed in this way is designated R_A. It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A. The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 72a and 72b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during September 1949 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5-degree intervals of position angle north and south of the solar equator at the limb. Beginning January 11, 1949, the actual measurements are on solar rotation coordinates rather than astronomical coordinates; thus values of the correction P given in previous coronal tables are omitted. The time of observation is given to the nearest tenth of a day, GCT. The tables of coronal observations in CRPL-F29 to F41 listed the data on astronomical coordinates; the present format on solar rotation coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 73a and 73b give similarly the intensities of the first red (6374A) coronal line; tables 74a and 74b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 72, 73, and 74: a, observation of low weight; -, corona not visible; and x, position angle not included in plate estimates.

SPECIAL ANNOUNCEMENT

Effective November 1, 1949, the detail of the radio propagation disturbance notices, broadcast on the National Bureau of Standards Radio Station WWV, will be extended by the addition of a third category. Heretofore, two grades of propagation conditions have been recognized in the notices given at nineteen and forty-nine minutes past each hour. The letter "N" (in International Morse Code) repeated eight times has signified normal conditions, while the letter "W" has constituted a warning that disturbed conditions were present or expected within 12 hours. The third category, denoted by the letter "U", is being added to describe unstable conditions -- satisfactory performance for services employing high-power transmitting equipment operating on the recommended frequency, but poor reception on less well-equiped services. The propagation disturbance notices primarily refer to North Atlantic radio circuits. Details are included in NBS Letter Circular LC 886, available upon request.

Table 1

Washington, D. C. (38.7°N, 77.1°W) — September 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.4						2.6
01	280	6.1						2.6
02	280	5.8						2.6
03	280	5.4						2.6
04	270	5.2						2.6
05	280	4.9						2.6
06	270	5.8			120	1.9		2.9
07	240	7.8	---	---	110	2.5		3.1
08	230	8.8	230	---	110	3.0	2.2	3.0
09	260	9.5	220	5.0	110	3.4		3.0
10	270	9.8	210	(5.2)	110	3.6		2.9
11	280	10.0	210	(5.1)	110	3.8		2.8
12	300	10.1	210	(5.5)	110	3.8		2.8
13	310	10.1	215	(5.4)	110	3.8		2.7
14	300	10.3	220	(5.5)	110	3.7		2.8
15	280	10.2	230	---	110	3.5		2.8
16	240	10.1	230	---	110	3.2		2.8
17	240	9.8	---	---	110	2.7		2.8
18	240	9.6			120	2.0		2.8
19	230	(9.1)						(2.8)
20	240	8.0						2.7
21	260	7.3						2.7
22	270	7.0						2.6
23	280	6.8						2.6

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 2

Oslo, Norway (60.0°N, 11.0°E) — August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	4.8						
01	295	4.8					2.3	
02	300	4.1					2.4	
03	300	3.9					2.4	
04	280	3.8	---	---			2.7	
05	250	4.7	---	---	140	1.8	2.4	
06	262	5.4	240	---	120	2.2	2.5	
07	275	6.0	240	4.0	110	2.6	3.2	
08	318	6.3	230	4 2	110	2.9	3.6	
09	315	6.5	220	4.5	105	3.0	3.8	
10	325	6.7	215	4.7	105	3.1	4.0	
11	325	6.9	210	4.7	105	3.3	4.0	
12	352	6.8	210	4.8	100	3.4	3.7	
13	365	6.8	215	4.9	100	3.4	3.6	
14	342	6.9	215	4.7	105	3.4	3.5	
15	322	6.9	220	4.7	105	3.2		
16	310	7.0	230	4.5	105	3.1		
17	285	7.1	240	---	110	2.8	3.1	
18	255	7.2	242	---	115	2.4	2.8	
19	250	6.9	250	---	130	2.0	2.7	
20	250	6.5			---	---	2.0	
21	250	6.5			---	---		
22	252	5.9						
23	270	5.3						

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Table 3

Boston, Massachusetts (42.4°N, 71.2°W) — August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	285	6.0						2.8
01	275	5.4						3.0
02	292	5.0						2.9
03	298	4.8						2.9
04	275	4.8						3.0
05	292	5.2						3.3
06	275	6.5						3.2
07	298	6.8	290	5.0				3.1
08	325	7.1	255	4.8				3.0
09	375	7.1	275	5.5				2.9
10	415	7.4	---	---				2.8
11	442	7.2	---	---				2.7
12	450	7.2	---	---				2.7
13	468	7.3	285	5.4				2.7
14	405	7.4	262	5.4				2.8
15	332	7.6	---	---				2.9
16	320	7.7	250	5.0				3.0
17	288	7.8	---	---				3.0
18	275	8.9						3.1
19	260	8.5						3.0
20	268	7.8						3.0
21	280	7.3						2.8
22	295	6.7						2.8
23	285	6.3						2.9

Time: 75.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 1 minute.

Table 4

San Francisco, California (37.4°N, 122.2°W) — August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	5.2					2.8	2.7
01	305	5.2					2.7	2.7
02	300	5.1					2.2	2.7
03	300	5.0					2.4	2.7
04	300	4.8					2.4	2.7
05	300	4.5					2.5	2.6
06	270	5.4	255	2.5	120	2.2	2.8	2.9
07	270	7.0	240	4.0	120	2.9	3.9	2.8
08	310	7.5	230	4.6	120	3.4	3.3	2.8
09	320	8.4	220	5.1	120	(3.7)	4.2	2.7
10	340	8.7	210	5.2	120	(3.8)	3.6	2.7
11	360	9.2	210	5.4	120	4.0		2.7
12	355	9.3	220	5.2	115	(4.0)		2.7
13	350	9.4	230	5.3	110	4.0		2.7
14	340	9.2	235	5.2	110	(4.0)		2.8
15	335	9.0	230	6.2	110	3.6	4.0	2.8
16	315	8.8	240	4.8	110	(3.4)	4.0	2.8
17	290	8.4	260	4.4	120	3.2	3.8	2.9
18	260	8.2	---	---	120	2.4	3.6	2.9
19	250	7.6					3.2	3.0
20	250	7.0					2.8	2.9
21	260	6.4					2.8	2.8
22	280	5.6					2.8	2.8
23	300	5.4					2.4	2.7

Time: 120.0°W.
Sweep: 1.3 Mc to 18.0 Mc in 4 minutes.

Table 5

White Sands, New Mexico (32.3°N, 106.5°W) — August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.5					2.4	2.5
01	300	5.2					2.9	2.6
02	290	5.2					2.9	2.6
03	285	5.0					2.4	2.7
04	280	4.8					2.6	2.6
06	280	4.6					2.8	2.6
06	260	5.8	260	---	110	(2.0)	3.9	2.8
07	240	7.2	240	4.0	110	2.7	5.0	2.8
08	295	8.0	230	4.5	110	(3.1)	4.9	2.7
09	336	8.4	220	5.0	110	3.4	5.0	2.6
10	370	8.6	220	5.3	110	3.6	5.1	2.6
11	370	9.5	220	5.3	110	3.8	4.7	2.6
12	370	9.5	220	5.4	110	3.9	4.8	2.6
13	360	9.4	220	5.4	110	3.9	4.6	2.6
14	350	9.7	225	5.2	110	3.8	4.9	2.6
15	340	9.3	230	5.1	110	3.6	4.7	2.6
16	320	9.3	240	4.9	110	3.4	4.5	2.7
17	280	9.1	240	4.3	110	2.8	4.6	2.8
18	260	8.6	245	---	110	(2.2)	3.4	2.8
19	250	7.8					2.8	2.9
20	240	7.0					2.7	2.8
21	260	6.4					2.6	2.7
22	280	5.8					2.7	2.6
23	310	5.4					2.3	2.5

Time: 105.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 2 minutes.

Table 6

Baton Rouge, Louisiana (30.6°N, 91.2°W) — August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.5						2.9
01	295	6.1						2.8
02	290	4.9						2.9
03	290	4.6						3.0
04	290	4.4						2.9
05	290	4.2						3.0
06	290	5.5	260	---	120	2.5		3.1
07	300	6.6	240	4.2	120	2.8		3.1
08	320	7.1	230	4.4	120	3.1		2.9
09	340	7.6	230	4.7	120	3.4		2.9
10	360	8.3	230	(4.9)	(110)	(3.6)		2.9
11	376	8.6	---	---	(120)	(3.6)		2.8
12	375	9.1	---	---	(115)	(3.6)		2.8
13	370	9.2	---	---	---	(3.6)		2.8
14	360	9.3	230	(5.0)	(120)	3.6		2.8
15	350	9.3	240	(4.6)	120	3.5		2.9
16	330	9.2	250	4.4	120	3.3		2.9
17	300	8.9	250	4.2	120	2.9		2.9
18	280	8.6	250	---	120	2.5		3.1
19	240	8.0						3.0
20	255	7.1						3.1
21	270	6.0						2.9
22	290	5.6						2.9
23	300	5.5						2.9

Time: 90.0°W.
Sweep: 2.12 Mc to 15.3 Mc in 5 minutes, automatic operation.

Table 7

Maui, Hawaii (20.8°N, 156.5°W) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	265	(7.8)					1.4	(2.9)
01	260	(7.8)					1.5	3.0
02	230	7.0						3.0
03	240	6.6						3.0
04	240	5.8						3.0
05	240	5.2						3.0
06	270	5.1	---	---	100	1.6		2.9
07	240	6.8	---	---	100	2.4		3.1
08	240	7.6	210	4.4	100	3.0	4.0	3.0
09	300	8.2	200	5.2	100	3.5	4.2	2.7
10	350	9.0	200	5.4	100	3.6	3.9	2.5
11	390	10.2	200	5.7	100	3.9	4.0	2.5
12	400	(11.1)	200	5.5	100	4.0	4.2	(2.6)
13	390	11.4	205	5.6	100	4.0	4.3	2.7
14	370	(11.6)	205	5.4	100	4.0	4.2	(2.8)
15	350	12.6	210	5.4	100	3.7	4.6	2.8
16	315	(12.7)	220	5.0	100	3.4	4.9	(2.9)
17	300	(12.1)	220	4.8	100	3.0	4.5	(3.0)
18	250	(11.3)	240	---	100	2.3	4.5	(3.0)
19	240	10.7			---	---	4.7	3.0
20	250	(10.6)					4.0	(3.0)
21	250	(10.2)					2.4	(2.8)
22	280	9.1					1.7	2.8
23	280	8.0					2.1	2.8

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 8

San Juan, Puerto Rico (18.4°N, 66.1°W) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	8.3						2.6
01	290	8.3						2.6
02	290	7.8						2.6
03	290	7.1						2.6
04	265	6.4						2.7
05	---	6.0						2.7
06	280	6.2						2.7
07	280	7.1		---				2.9
08	300	8.1		4.6		3.2		2.8
09	330	8.6		5.2		3.7		2.7
10	350	9.8		5.5		---		2.6
11	360	10.4		5.5		---	4.5	2.6
12	365	11.1		5.5		4.0	5.2	2.6
13	365	11.7		---		4.2	(5.9)	2.6
14	350	11.5		5.5		(4.0)	5.1	2.6
15	350	11.5		5.3		3.8	4.4	2.6
16	350	11.3		4.9		3.6	5.0	2.6
17	340	10.9		---		3.2	4.4	2.6
18	310	10.2					3.7	2.6
19	290	10.0						2.6
20	300	9.3						2.5
21	300	8.9						2.6
22	310	8.5						2.5
23	320	8.2						2.5

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc in 9 minutes, automatic operation; supplemented by manual operation.

Table 9

Guam I. (13.6°N, 144.9°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	(9.2)						(3.0)
01	245	7.1						3.0
02	250	6.6						2.8
03	250	7.0						3.0
04	240	5.8					1.6	3.1
05	230	5.0						3.2
06	250	4.6	---	---			2.1	3.1
07	250	7.2	220	2.7	120	2.5	3.0	3.1
08	260	8.9	220	---	110	3.2	3.9	3.0
09	300	9.8	210	---	100	3.6	5.0	2.8
10	345	10.2	210	5.0	110	3.8	4.8	2.5
11	375	10.6	200	5.0	110	4.0		2.5
12	395	(10.2)	200	5.2	105	(4.0)		2.3
13	400	(10.4)	200	(5.0)	---	---		(2.4)
14	380	(10.6)	210	5.2	110	4.0		(2.5)
15	360	(12.0)	215	5.2	110	3.9		2.6
16	360	(11.8)	220	---	110	3.6	4.7	(2.7)
17	360	(11.3)	230	---	110	---	5.0	2.8
18	370	(11.3)	255	---	---	---	5.0	(2.7)
19	315	(11.0)					2.2	(2.8)
20	350	(10.2)						(2.6)
21	300	(9.8)						---
22	290	(9.7)					1.6	(2.9)
23	300	(8.2)					2.0	---

Time: 150.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 10

Trinidad, Brit. West Indies (10.6°N, 61.2°W) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	10.4						3.0
01	250	9.4						3.1
02	250	8.2						3.0
03	250	7.4						3.0
04	250	7.1						3.1
05	250	6.4						3.0
06	260	6.5			---	---	2.2	3.1
07	240	7.3	---	---	120	2.7	3.2	3.3
08	260	8.2	220	(4.7)	120	3.3	3.9	3.1
09	300	9.1	220	5.2	120	3.7	4.4	2.9
10	325	10.1	220	5.4	120	4.0	4.6	2.7
11	340	11.5	220	5.5	120	4.2	4.8	2.8
12	340	12.2	220	5.7	120	4.2	5.0	2.8
13	340	12.8	220	5.7	120	4.2	5.5	2.8
14	330	12.6	220	5.7	120	4.1	5.6	2.8
15	320	12.4	220	5.4	120	3.9	5.2	2.8
16	300	11.8	230	5.1	120	3.4	5.0	2.8
17	280	11.2	230	4.4	120	2.9	4.6	2.8
18	270	10.9	---	---	120	2.0	4.4	2.8
19	270	10.3					3.8	2.8
20	270	10.6					2.8	2.8
21	280	10.8						2.8
22	280	10.8						2.8
23	270	10.4						2.9

Time: 60.0°W.
Sweep: 1.5 Mc to 18.0 Mc, manual operation.

Table 11

Palmyra I. (5.9°N, 162.1°W) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	10.7						2.8
01	250	10.2						2.8
02	250	9.2						2.9
03	250	8.3					1.7	2.9
04	240	6.6					2.0	3.0
05	250	4.6					2.0	3.0
06	275	4.4			150	1.3	2.0	2.8
07	250	7.0			120	2.5	3.2	2.8
08	250	8.6	---	---	115	3.2		2.6
09	240	9.2	225	---	120	3.6		2.4
10	370	9.6	220	5.0	120	3.8		2.3
11	390	10.0	220	5.1	120	3.8		2.2
12	390	10.4	210	---	120	---		2.2
13	410	10.8	220	5.3	120	---		2.2
14	400	11.4	220	5.3	120	4.0		2.2
15	390	11.5	220	5.0	120	3.7		2.2
16	340	11.4	230	---	120	3.5		2.3
17	250	11.2	---	---	120	3.0	3.7	2.3
18	280	11.1			120	2.1	3.8	2.3
19	330	10.5					3.0	2.2
20	350	9.7						2.2
21	310	10.0						2.4
22	275	10.0					2.2	2.6
23	250	11.5					1.8	2.7

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds, automatic operation; 13.0 Mc to 18.0 Mc, manual operation.

Table 12

Huancayo, Peru (12.0°S, 75.3°W) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	7.6						3.1
01	230	7.1						3.1
02	240	6.2						3.2
03	240	5.8						3.1
04	250	4.8						3.2
05	260	3.8						3.2
06	280	5.2				1.4	3.2	3.0
07	250	7.6				2.5	5.8	3.1
08	230	9.3				3.1	10.6	2.8
09	300	10.1	220	5.4		3.6	10.8	2.5
10	305	9.8	205	5.4		3.9	10.8	2.5
11	315	9.6	200	5.3		3.9	10.8	2.4
12	330	9.4	200	5.3		4.0	10.8	2.4
13	340	9.4	200	5.3		4.0	10.8	2.2
14	300	9.4	200	5.0		3.8	10.8	2.3
15	210	9.6				3.6	10.8	2.3
16	230	9.7				3.0	10.6	2.3
17	250	9.5				2.4	5.7	2.3
18	300	9.2				1.2		2.3
19	360	8.3						2.3
20	320	8.3						2.4
21	285	8.2						2.6
22	240	8.0						2.9
23	230	7.8						3.0

Time: 75.0°W.
Sweep: 0.5 Mc to 16.0 Mc in 15 minutes, automatic operation.

Table 13

Lindau/Harz, Germany (51.6°N, 10.1°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.8					3.4	
01	280	6.4					3.4	
02	260	6.1					3.1	
03	290	5.8					3.3	
04	270	5.8			100	1.2	3.4	
05	270	6.4	240		110	1.9	3.6	
06	300	6.8	230	4.1	100	2.4	3.9	
07	300	7.5	230	4.6	100	2.8	4.4	
08	310	7.2	220	4.7	100	3.1		
09	320	7.4	210	5.0	100	3.3		
10	340	7.6	210	5.1	100	3.4	5.6	
11	340	7.6	210	5.2	100	3.5	5.6	
12	340	7.6	220	5.2	100	3.6		
13	350	7.4	220	5.4	100	3.6		
14	350	7.3	220	5.2	100	3.6		
15	350	7.1	210	5.0	100	3.4		
16	340	7.1	220	4.9	100	3.3		
17	300	7.2	210	4.6	100	3.0		
18	300	7.1	220	4.3	100	2.8	4.3	
19	270	7.6	240		110	2.3	4.0	
20	260	7.7			100	1.8	3.6	
21	260	7.6					4.2	
22	260	7.5					3.5	
23	260	7.4					3.2	

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 12 minutes.

Table 14

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(260)	2.8					1.8	2.8
01	(280)	2.9						2.8
02	(270)	3.0					1.7	2.9
03	(250)	2.9					3.4	3.0
04	(240)	2.8					3.7	3.0
05	(250)	2.6					2.4	2.9
06	(250)	2.7			---	E	3.4	3.0
07	230	5.1			---	1.8		3.3
08	230	7.4	---	---	120	(2.6)		3.3
09	240	8.2	220	---	110	(3.1)		(3.3)
10	250	9.0	220	---	110	3.4		3.2
11	250	9.2	210	4.4	110	(3.6)		3.2
12	260	9.1	210	4.8	110	3.6		3.0
13	260	9.2	210	4.6	110	(3.6)	3.9	3.0
14	270	9.3	215	5.0	110	3.5	3.8	3.0
15	260	9.0	220	4.4	110	(3.3)	3.8	3.0
16	250	8.9	230	---	110	2.9	3.5	3.0
17	230	9.2			110	2.2	3.1	3.2
18	210	7.4					2.5	3.3
19	220	5.0					2.4	3.2
20	230	3.9					2.0	3.2
21	(240)	3.1					2.0	3.1
22	250	2.9					1.6	3.0
23	(250)	2.9					1.6	2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 15

Capetown, Union of S. Africa (34.2°S, 18.3°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	2.6						2.9
01	---	2.7						2.8
02	---	2.8						2.8
03	(260)	3.0						2.9
04	250	2.9						3.0
05	(250)	2.7						3.0
06	(240)	2.7	---	---				2.9
07	(250)	2.7	---	---	---	E		2.9
08	230	5.6	---	---	---	(1.8)		3.2
09	230	(7.6)	225	---	110	2.5		3.3
10	240	(8.0)	220	---	110	(3.0)		3.2
11	255	(8.5)	210	---	110	(3.2)		(3.2)
12	260	(8.8)	200	---	110	---		(3.0)
13	270	9.6	210	---	110	---		3.0
14	270	9.8	220	---	110	---		3.0
15	260	9.4	230	---	110	(3.0)	3.3	3.0
16	255	9.4	240	---	110	2.8	3.2	3.0
17	240	9.5	---	---	110	2.5	2.6	3.2
18	220	7.5			---	---		(3.2)
19	220	(5.7)						(3.2)
20	220	4.0						(3.2)
21	220	2.8						3.2
22	(240)	2.5						3.0
23	(260)	2.4						2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 16

Lindau/Harz, Germany (51.6°N, 10.1°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.1						
01	300	6.9					2.4	
02	290	6.6					2.0	
03	295	6.4					2.0	
04	300	6.3			100	1.6	2.4	
05	280	6.8	260	3.3	100	2.0	3.0	
06	300	7.2	240	4.0	100	2.4	2.9	
07	310	7.2	230	4.5	100	2.9		
08	340	7.3	220	4.8	100	3.2	3.8	
09	350	7.5	210	5.0	100	3.4	4.8	
10	370	7.5	210	5.0	100	3.5	4.8	
11	360	7.6	210	5.2	100	3.6	4.9	
12	390	7.4	210	5.3	100	3.6	4.6	
13	370	7.6	210	5.3	100	3.5	5.3	
14	350	7.2	210	5.2	100	3.6	4.6	
15	360	7.1	210	5.2	100	3.4	4.4	
16	360	7.1	230	5.0	100	3.4	3.8	
17	350	7.1	230	4.8	100	3.1	3.6	
18	310	7.2	240	4.4	100	2.8	4.5	
19	290	7.6	250	3.8	100	2.4	3.8	
20	270	7.7			110	1.7	3.5	
21	250	8.0					3.2	
22	260	7.8					2.0	
23	270	7.5					2.6	

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 12 minutes.

Table 17

Wakkanai, Japan (45.4°N, 141.7°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.3					2.9	2.6
01	300	7.0					2.4	2.6
02	300	7.1					2.7	2.7
03	300	6.7					1.9	2.6
04	295	6.7	---	---	---	1.8	1.9	2.6
05	300	7.2	260	3.6	100	2.3	3.1	2.7
06	320	7.8	255	4.4	100	2.8	4.1	2.8
07	335	8.1	260	4.5	100	3.2	5.2	2.8
08	325	8.2	260	4.9	100	3.5	5.5	2.8
09	340	7.9	220	5.0	100	3.6	6.0	(2.8)
10	380	7.7	215	5.0	100	3.7	5.8	2.7
11	390	8.0	220	5.2	100	(3.6)	5.8	(2.7)
12	390	8.0	250	5.2	100	3.8	5.6	2.6
13	390	7.8	250	5.2	100	(3.7)	5.4	2.7
14	390	7.6	240	5.0	100	3.7	5.5	2.6
15	370	7.8	245	5.0	100	3.5	5.2	2.7
16	340	7.9	250	4.7	100	3.3	4.9	2.8
17	315	7.8	250	(4.5)	100	2.9	5.1	2.9
18	310	7.4	260	---	105	2.4	5.4	2.8
19	300	7.9	250	---	110	(1.8)	4.2	2.8
20	300	7.5					3.8	2.8
21	295	(7.5)					3.7	2.7
22	300	7.1					3.3	2.7
23	300	7.2					3.4	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 18

Fukaura, Japan (40.6°N, 139.9°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.9					3.6	2.7
01	300	8.0					3.0	2.7
02	300	7.6					3.0	2.8
03	300	7.2					3.0	2.7
04	290	7.2			---	---	3.1	2.7
05	285	7.4	250	---	110	2.3	3.2	2.8
06	295	7.9	240	---	110	2.8	4.4	2.8
07	310	8.2	245	4.9	110	3.2	5.6	2.8
08	310	8.4	220	---	110	3.4	6.2	2.8
09	320	8.3	---	---	110	3.4	6.8	2.8
10	375	8.0	---	5.6	110	---	5.8	2.7
11	370	8.4	---	5.6	110	---	6.6	2.7
12	380	8.4	---	(5.6)	110	---	7.0	2.7
13	375	8.4	---	5.6	110	3.8	6.2	2.8
14	370	8.6	---	5.6	110	---	5.8	2.8
15	360	8.8	230	5.2	110	---	5.2	2.8
16	340	8.5	240	5.0	110	3.4	5.4	2.8
17	315	8.6	240	4.5	110	3.0	4.9	2.8
18	300	8.4	250	---	120	2.6	4.7	2.9
19	280	8.5	---	---	---	---	3.8	2.9
20	285	8.4					3.8	2.8
21	300	8.1					4.8	2.7
22	315	8.3					4.6	2.7
23	305	8.1					4.1	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 19

Shibata, Japan (37.9°N, 139.3°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	8.3					3.7	2.8
01	280	8.4					3.6	2.8
02	270	8.0					3.5	2.9
03	260	7.8					3.6	2.8
04	285	7.3					3.2	2.9
05	270	7.6	225	---	115	2.0	3.7	3.0
06	270	8.6	210	---	100	2.7	4.8	2.9
07	275	8.4	210	4.4	100	3.2	5.6	3.0
08	280	8.2	220	5.0	100	3.4	6.9	3.0
09	300	8.4	220	---	100	3.6	8.8	2.9
10	330	8.4	230	5.6	100	3.8	7.6	2.8
11	330	8.8	205	5.5	100	4.0	9.0	2.8
12	340	9.0	210	5.4	100	---	8.5	2.8
13	330	8.8	205	5.4	100	---	7.4	2.8
14	320	9.2	200	5.4	100	3.8	7.3	2.9
15	310	9.3	205	5.2	100	3.6	6.0	2.9
16	300	9.1	220	4.8	100	3.3	6.5	2.9
17	295	9.3	215	4.4	100	3.1	6.0	3.0
18	270	9.0	230	---	100	2.4	5.1	3.0
19	250	8.9	---	---	---	1.9	3.9	3.0
20	255	8.5					4.0	2.9
21	270	8.5					4.2	2.7
22	290	8.4					4.4	2.8
23	290	8.4					4.4	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 20.

Tokyo, Japan (35.7°N, 139.5°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	8.5					4.9	2.9
01	285	8.5					4.2	2.9
02	275	8.0					4.3	2.9
03	260	7.9					4.1	2.8
04	275	7.5	---	---	---	---	3.8	2.8
05	250	7.6	240	---	100	1.8	3.6	3.0
06	270	8.5	230	4.4	100	2.7	4.0	3.0
07	280	8.4	240	4.4	100	3.2	5.3	3.0
08	300	8.3	245	5.0	100	3.4	6.6	2.9
09	330	8.4	250	5.1	100	3.6	8.0	2.8
10	350	8.8	250	5.6	100	3.8	8.0	2.7
11	355	9.2	230	5.6	100	3.8	8.7	2.8
12	330	9.4	220	5.7	100	3.8	7.3	2.8
13	330	9.7	210	5.5	100	3.8	6.4	2.8
14	330	9.8	230	5.4	100	3.8	6.1	2.8
15	330	9.8	230	5.2	100	3.6	5.5	2.9
16	310	9.8	220	5.0	100	3.3	5.2	2.9
17	300	9.5	230	(4.6)	100	2.9	5.6	2.9
18	270	9.4	220	---	100	2.2	4.5	3.0
19	260	9.3	---	---	---	---	4.4	3.0
20	270	8.5					4.1	2.8
21	280	8.4					4.3	2.8
22	300	8.5					5.2	2.8
23	300	8.7					5.4	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 21

Yamakawa, Japan (31.2°N, 130.6°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	9.2					4.2	2.7
01	300	9.2					4.6	2.7
02	295	9.3					4.6	2.8
03	280	8.4					3.6	2.8
04	280	7.6					3.8	2.8
05	280	7.4					3.4	2.8
06	260	7.4	250	---	105	2.1	3.6	3.0
07	270	8.2	230	---	110	2.8	4.4	3.0
08	280	8.3	235	---	100	3.3	5.2	2.9
09	320	8.6	225	---	100	3.4	7.0	2.8
10	340	9.0	210	5.3	105	(3.6)	6.6	2.6
11	400	9.6	210	5.5	100	3.7	7.2	2.6
12	390	9.8	(210)	5.6	100	(3.9)	6.8	2.6
13	380	10.3	215	5.6	110	4.0	8.0	2.6
14	380	10.5	220	5.5	110	3.8	6.2	2.7
15	350	10.7	230	5.4	110	3.7	5.6	2.7
16	340	11.0	235	5.2	100	3.6	6.2	2.8
17	320	10.9	250	4.9	100	3.2	4.8	2.8
18	300	10.6	240	---	100	2.7	4.6	2.8
19	290	10.2	260	---	---	(2.0)	4.8	2.9
20	270	8.8					4.5	2.8
21	290	8.8					4.2	2.6
22	310	8.9					4.2	2.7
23	310	9.0					4.4	2.7

Time: 135.0°E.
Sweep: 1.2 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 22

Chungking, China (29.4°N, 106.8°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	9.2					5.0	2.6
01	260	8.8					5.6	2.6
02	260	8.2					4.8	2.6
03	260	7.1					4.3	2.6
04	280	6.8					4.5	2.6
05	270	6.8					4.5	2.6
06	260	7.6	230	---	---	---	5.8	2.7
07	280	8.9	230	---	---	---	6.3	2.8
08	300	9.6	220	---	---	---	8.0	2.7
09	310	10.0	215	5.4	---	---	9.0	2.6
10	340	10.3	210	5.8	---	---	6.9	2.4
11	380	11.1	210	5.8	---	---	7.8	2.5
12	375	11.5	210	5.8	105	4.5	6.8	2.4
13	360	12.0	200	5.6	---	---	6.0	2.5
14	350	12.5	200	5.6	---	---	5.4	2.6
15	320	12.6	200	5.5	80	3.8	5.8	2.8
16	300	12.5	200	5.0	80	3.4	5.0	2.8
17	280	11.7	200	4.6	80	3.2	5.6	2.8
18	280	11.5	230	---			4.8	2.7
19	240	11.2					3.6	2.7
20	260	9.6					4.1	2.7
21	280	9.2					4.1	2.5
22	290	9.6					4.8	2.5
23	300	9.5					5.0	2.6

Time: 105.0°E.
Sweep: 1.5 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 23

Watheroo, W. Australia (30.3°S, 115.9°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	3.6					2.9	2.8
01	270	3.7					3.8	2.8
02	260	3.6					2.9	2.8
03	260	3.8					2.8	2.8
04	240	3.8					2.9	3.0
05	235	3.6					2.9	3.0
06	230	3.3					3.1	3.0
07	230	4.9				1.8	2.8	3.2
08	230	7.2				2.5	2.8	3.5
09	240	8.4	220	4.5		2.9	3.3	3.4
10	260	9.6	230	5.0		3.2	3.3	3.4
11	240	9.5	220	5.0		3.3	3.6	3.3
12	250	9.5	220	5.0		3.3	3.8	3.2
13	260	9.7	220	5.0		3.3	3.8	3.1
14	250	9.6	220	5.0		3.3	3.5	3.2
15	250	9.8	230	5.0		3.0	3.4	3.2
16	230	9.6	225	4.6		2.6	3.3	3.2
17	220	8.9				1.8	3.3	3.2
18	210	6.9					3.2	3.3
19	220	5.2					2.9	3.2
20	230	4.1					3.0	3.2
21	240	3.7					3.0	3.1
22	255	3.3					2.8	2.8
.23	250	3.5					2.8	2.8

Time: 120.0°E.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 24

Capetown, Union of S.Africa (34.2°S, 18.3°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	2.3						2.8
01	(300)	2.4						2.8
02	(280)	2.6						2.7
03	(290)	2.7						2.8
04	(270)	2.7						2.9
05	(260)	2.7						3.0
06	(270)	2.7						2.9
07	(250)	2.6			---	E		2.9
08	230	5.6			---	(1.9)		3.3
09	230	7.4	230	---	110	2.5		3.3
10	240	8.7	230	3.4	110	(3.0)		3.3
11	250	(9.2)	220	---	110	3.2		(3.2)
12	250	9.4	220	---	110	3.4		(3.1)
13	250	9.9	220	---	110	3.4		3.0
14	260	9.9	220	---	110	3.3	3.6	3.0
15	260	10.2	220	---	110	3.1	3.4	3.0
16	240	10.2	---	---	110	2.8	3.2	3.1
17	230	9.0			110	2.2	2.6	3.2
18	220	(7.2)			---	---		(3.3)
19	210	4.6					2.1	3.1
20	225	(3.4)						(3.2)
21	240	2.9						3.1
22	(240)	2.6						3.1
23	(250)	2.4						2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 25

Christchurch, New Zealand (43.5°S, 172.7°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.5					3.8	2.6
01	300	3.6					3.6	2.7
02	300	3.7					4.4	2.6
03	300	3.7					4.4	2.6
04	290	3.6					4.2	2.7
05	270	3.5					4.4	2.9
06	260	3.2					4.4	2.8
07	250	3.4					3.7	3.0
08	240	6.4				1.5	4.4	3.2
09	240	8.0	---	---		2.2	4.4	3.2
10	250	8.8	---	---		2.7	5.0	3.3
11	240	9.0	230	4.0		2.9	4.6	3.2
12	250	8.8	240	4.3		3.0	5.0	3.1
13	250	9.4	250	4.2		3.0	4.9	3.0
14	250	9.4	250	3.8		2.7	6.1	3.2
15	250	9.0	---	---		2.4	5.4	3.1
16	240	8.4	---	---		1.7	4.4	3.1
17	240	6.8				---	3.8	3.0
18	250	5.6					4.4	2.8
19	260	5.6					4.0	2.8
20	270	5.0					3.6	2.8
21	280	4.4					3.5	2.7
22	300	4.3					3.0	2.7
23	290	3.8					3.0	2.6

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc.

Table 26

Lanchow, China (36.1°N, 103.8°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	8.2					3.6	2.5
01	340	8.4					3.7	2.5
02	340	8.8					3.8	2.5
03	340	7.7					3.2	2.5
04	340	7.2					3.2	2.4
05	340	7.3					2.6	2.4
06	320	8.3					3.4	2.5
07	320	10.5	300	---	140	2.9	4.4	2.5
08	340	11.2	320	---	140	3.4	4.6	2.6
09	360	11.5	320	---	---	---	5.0	2.5
10	380	11.5	320	---	---	---	5.3	2.5
11	380	12.5	355	---	---	---	5.2	2.3
12	380	13.2	350	---	---	---	(5.2)	2.5
13	380	13.5	330	---	---	---	4.7	2.4
14	380	13.2	330	---	---	---	5.0	2.4
15	380	13.5	340	---	---	---	4.5	2.4
16	360	12.3	300	---	---	---	4.5	2.4
17	360	13.0	320	---	140	3.5	4.8	2.5
18	360	11.5	300	---	---	---	4.8	2.5
19	310	11.8					4.6	2.5
20	290	(10.0)					(4.5)	(2.5)
21	290	8.9					(4.1)	2.5
22	320	9.4					3.9	2.4
23	330	9.0					4.1	2.4

Time: 105.0°E.
Sweep: 2.4 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 27

Delhi, India (28.5°N, 77.1°E) May 1949 **

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	440	10.2						2.6
01	430	9.5						
02	---	---						
03	---	---						
04	---	---						2.5
05	400	8.8						
06	380	9.5						
07	360	10.2						
08	380	10.6						2.6
09	400	11.2						
10	420	12.1						
11	460	12.7						
12	---	(13.2)						2.4
13	(410)	(13.3)						
14	---	(13.3)						
15	---	(12.9)						
16	---	(12.7)						2.6
17	---	(12.7)						
18	---	(12.5)						
19	(400)	(11.3)						
20	415	(10.9)						2.5
21	440	(10.5)						
22	460	10.0						2.4
23	445	9.9						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 28

Bombay, India (19.0°N, 73.0°E) May 1949 **

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	330	9.7						
08	---	---						
09	420	11.9						
10	480	13.2						
11	510	(13.9)						
12	---	(14.3)						2.2
13	---	---						
14	---	(14.7)						
15	---	(14.9)						
16	---	(15.1)						
17	---	(15.2)						
18	---	(14.9)						
19	480	(14.6)						
20	480	14.3						2.5
21	480	13.8						
22	480	13.4						2.6
23	---	---						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 29

Madras, India (13.0°N, 80.2°E) May 1949 **

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	420	10.1						
08	435	10.8						2.5
09	480	11.4						
10	540	11.7						
11	540	12.2						
12	540	12.6						2.3
13	540	13.0						
14	540	(13.5)						
15	540	13.8						
16	540	(14.0)						2.3
17	540	(13.6)						
18	540	(13.0)						
19	540	(12.6)						
20	510	(11.8)						2.4
21		(11.4)						
22		11.0						
23		---						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 30

Tiruchirapalli, India (10.8°N, 78.8°E) May 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	9.0						
07	390	9.9						
08	420	11.5						
09	510	11.6						
10	540	11.3						
11	540	11.2						
12	540	11.5						
13	580	11.0						
14	600	11.0						
15	620	12.2						
16	560	12.2						
17	585	12.6						
18	540	12.3						
19	580	12.2						
20	540	11.8						
21	510	11.5						
22	500	11.8						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Tabla 31

Calcutta, India (22.6°N, 88.4°E) — April 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	(240)	(12.4)				1.2		(2.8)
01		(11.2)				1.2		
02		(10.1)				1.3		
03	---	(9.0)				1.1		---
04		---				---		
05		---				---		
06	(240)	(8.6)				2.0		(2.9)
07		10.6				3.1		
08		11.0				3.6		
09	270	12.4				3.8		2.7
10		12.6				4.0		
11		12.6				4.0		
12	(240)	12.5				3.9		2.8
13		12.5				---		
14		12.5				---		
15	---	12.6				---		---
16		12.6				3.8		
17		12.5				3.4		
18	(240)	12.5				3.2		(2.8)
19		(11.8)				---		
20		(12.4)				2.0		
21	240	12.0				1.5		2.8
22		12.2				1.4		
23		12.3				1.2		

Time: Local.
*Probably includes fEs observations.

Tabla 32

Calcutta, India (22.6°N, 88.4°E) — March 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	240	13.0				1.3		2.8
01		12.4				1.1		
02		11.3				1.1		
03	(210)	8.4				1.1		(3.1)
04		---				---		
05		(7.8)				1.1		
06	---	(9.1)				2.1		---
07		11.0				2.7		
08		12.4				3.2		
09	270	12.8				4.2		2.8
10		13.2				4.0		
11		13.2				4.1		
12	---	13.1				---		(2.6)
13		(13.1)				---		
14		13.2				---		
15	---	13.1				---		---
16		13.0				3.8		
17		13.0				3.4		
18	270	13.0				3.0		2.8
19		12.6				2.9		
20		12.4				2.5		
21	(210)	(12.8)				1.5		(2.8)
22		13.0				1.3		
23		14.0				1.4		

Time: Local.
*Probably includes fEs observations.

Table 33

Calcutta, India (22.6°N, 88.4°E) — August 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	330	10.2				2.7		2.7
01		9.6				2.4		
02		8.7				2.2		
03	300	(8.2)				2.5		(2.7)
04		7.4				2.2		
05		7.6				2.2		
06	360	8.2				2.7		2.7
07		8.9				3.0		
08		9.8				3.6		
09	360	10.8				4.2		2.7
10		11.0				4.2		
11		11.2				4.5		
12	390	11.1				4.5		2.4
13		11.2				---		
14		11.2				---		
15	390	11.2				---		(2.7)
16		11.1				4.5		
17		11.0				4.4		
18	360	11.2				4.2		2.7
19		11.1				3.8		
20		11.0				3.0		
21	360	11.0				3.0		2.7
22		10.9				3.1		
23		10.6				2.9		

Time: Local.
*Probably includes fEs observations.

Table 34

Calcutta, India (22.6°N, 88.4°E) — July 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	345	9.9				2.0		2.8
01		9.8				1.9		
02		(8.9)				2.0		
03	---	(7.6)				2.0		---
04		---				---		
05		(6.8)				2.0		
06	330	7.2				2.6		2.8
07		8.0				3.2		
08		9.2				3.8		
09	360	10.4				4.0		2.7
10		11.0				4.0		
11		11.2				4.2		
12	(390)	11.0				---		2.6
13		11.0				---		
14		11.1				---		
15	360	11.2				4.0		2.6
16		11.0				4.0		
17		11.0				3.6		
18	360	11.0				3.3		2.7
19		10.8				3.2		
20		10.9				3.2		
21	(360)	10.9				3.0		2.8
22		10.5				2.9		
23		10.0				2.0		

Time: Local.
*Probably includes fEs observations.

Table 35

Calcutta, India (22.6°N, 88.4°E) — June 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	(360)	10.0				2.6		(2.7)
01		(9.7)				3.4		
02		(9.2)				3.4		
03	---	(8.1)				2.8		---
04		---				---		
05		(7.4)				2.8		
06	(330)	7.4				3.0		(2.8)
07		9.0				3.4		
08		10.1				3.8		
09	---	11.0				4.2		---
10		11.0				5.0		
11		11.0				---		
12	---	11.0				---		---
13		11.0				---		
14		11.0				---		
15	---	11.0				---		---
16		11.0				4.6		
17		11.0				5.2		
18	(360)	11.0				4.7		(2.6)
19		10.8				4.8		
20		(10.6)				4.0		
21	(390)	(10.7)				4.4		(2.6)
22		(10.6)				4.2		
23		10.1				2.5		

Time: Local.
*Probably includes fEs observations.

Tabla 36

Calcutta, India (22.6°N, 88.4°E) — May 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	390	10.6				3.7		2.6
01		10.2				3.8		
02		9.3				3.5		
03	(400)	8.2				3.2		(2.4)
04		7.6				2.6		
05		7.8				2.8		
06	(375)	9.0				3.0		(2.5)
07		9.7				3.6		
08		10.6				3.9		
09	---	10.8				4.4		---
10		11.0				4.2		
11		11.0				---		
12	---	11.0				---		---
13		11.0				---		
14		(11.0)				---		
15	---	(11.0)				---		---
16		11.0				---		
17		11.0				6.7		
18	(390)	11.0				6.1		(2.7)
19		11.0				4.7		
20		11.0				4.6		
21	375	10.9				4.5		(2.6)
22		10.8				4.4		
23		10.8				3.9		

Time: Local.
*Probably includes fEs observations.

Table 37

Calcutta, India (22.6°N, 88.4°E) April 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	360	9.8				2.7		2.7
01		9.2				2.4		
02		8.4				2.4		
03	(390)	(8.0)				2.2		(2.4)
04		7.4				1.9		
05		7.4				2.0		
06	(360)	8.8				2.6		(2.7)
07		10.0				3.2		
08		10.4				3.6		
09	(390)	10.8				3.6		(2.6)
10		10.8				4.5		
11		11.0				---		
12	---	11.0				---		---
13		11.0				---		
14		11.0				---		
15	(345)	11.0				---		(2.7)
16		10.9				---		
17		10.9				4.6		
18	(360)	10.8				4.8		(2.6)
19		10.8				3.6		
20		10.8				3.2		
21	(390)	10.8				3.1		(2.9)
22		10.7				3.4		
23		10.5				3.3		

Time: Local.
*Probably includes fEs observations.

Table 38

Calcutta, India (22.6°N, 88.4°E) March 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	300	9.7				1.8		2.6
01		8.7				2.0		
02		8.2				2.0		
03	330	7.0				1.9		2.7
04		5.0				2.0		
05		6.3				2.0		
06	300	7.1				2.3		2.6
07		8.8				3.0		
08		10.0				3.2		
09	300	10.8				3.7		2.6
10		11.0				4.2		
11		11.4				4.6		
12	360	11.6				5.0		2.4
13		12.0				4.3		
14		(11.7)				4.0		
15	360	11.5				3.6		2.5
16		11.3				3.6		
17		11.2				3.4		
18	360	11.0				3.0		2.6
19		10.8				2.5		
20		10.7				2.1		
21	300	10.6				2.0		2.6
22		10.5				2.0		
23		10.1				1.9		

Time: Local.
*Probably includes fEs observations.

Table 39

Calcutta, India (22.6°N, 88.4°E) February 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	330	10.0				2.2		2.6
01		8.5				2.2		
02		7.8				2.0		
03	300	6.2				2.4		2.6
04		5.8				2.2		
05		(6.0)				1.9		
06	330	7.2				2.2		2.7
07		7.9				2.8		
08		9.7				3.0		
09	360	10.9				3.9		2.6
10		11.0				4.0		
11		(11.0)				4.2		
12	360	11.0				4.2		2.6
13		11.0				4.2		
14		11.0				3.8		
15	330	11.0				3.6		2.5
16		11.0				3.4		
17		(11.0)				3.4		
18	300	(10.9)				3.5		(2.5)
19		(11.0)				3.3		
20		(11.0)				3.0		
21	300	(10.9)				2.8		(2.5)
22		10.6				2.6		
23		(10.6)				2.6		

Time: Local.
*Probably includes fEs observations.

Table 40

Calcutta, India (22.6°N, 88.4°E) January 1948

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	10.0				2.4		2.7
01		9.3				2.2		
02		8.6				2.2		
03	300	7.2				2.0		2.6
04		5.4				2.0		
05		4.9				2.3		
06	300	(7.6)				2.4		2.6
07		9.0				2.8		
08		10.6				3.6		
09	315	11.6				3.8		2.6
10		11.8				4.0		
11		11.6				4.0		
12	360	11.6				3.8		2.4
13		11.6				4.1		
14		11.7				4.2		
15	390	11.1				4.0		2.4
16		11.0				3.5		
17		11.0				3.3		
18	360	11.4				2.8		2.6
19		11.2				2.6		
20		11.0				2.6		
21	270	11.2				2.5		2.6
22		11.0				2.5		
23		10.6				2.2		

Time: Local.
*Probably includes fEs observations.

Table 41

Calcutta, India (22.6°N, 88.4°E) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	270	9.5				1.8		2.7
01		8.4				1.7		
02		8.2				1.6		
03	270	7.4				1.6		2.8
04		6.4				1.6		
05		6.6				1.8		
06	300	7.5				2.0		3.0
07		9.0				2.6		
08		11.8				3.0		
09	330	11.2				3.4		2.8
10		11.6				4.0		
11		(11.6)				4.2		
12	352	11.6				4.2		2.8
13		11.6				4.2		
14		11.6				4.2		
15	240	11.6				4.2		2.6
16		11.7				3.2		
17		11.6				2.9		
18	300	11.7				2.7		---
19		11.5				2.6		
20		11.2				2.4		
21	240	10.5				2.2		3.0
22		10.8				2.1		
23		10.0				1.6		

Time: Local.
*Probably includes fEs observations.

Table 42

Calcutta, India (22.6°N, 88.4°E) November 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	(330)	11.0				2.2		(2.6)
01		11.5				2.2		
02		11.2				2.0		
03	295	9.4				2.0		2.7
04		7.9				2.2		
05		8.4				2.5		
06	285	9.2				2.6		2.8
07		10.8				3.0		
08		11.5				3.3		
09	---	11.7				3.6		(2.6)
10		11.8				4.1		
11		11.9				4.0		
12	(330)	11.9				4.7		(2.8)
13		12.0				4.5		
14		12.0				4.0		
15	330	11.8				3.9		2.6
16		11.8				3.6		
17		11.9				3.2		
18	330	11.8				3.2		2.7
19		11.8				3.0		
20		11.7				2.6		
21	300	11.5				2.5		2.8
22		11.7				2.4		
23		11.6				2.6		

Time: Local.
*Probably includes fEs observations.

Table 43

Calcutta, India (22.6°N, 88.4°E) * September 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	9.6				2.6		2.7
01		8.6				2.0		
02		8.1				2.0		
03	320	7.8				1.8		2.6
04		(7.2)				2.7		
05		7.3				2.1		
06	340	8.4				2.6		2.6
07		9.6				3.0		
08		10.2				3.6		
09	---	11.0				4.2		---
10		11.2				4.4		
11		11.2				---		
12	---	(11.4)				---		---
13		(10.8)				---		
14		(11.5)				---		
16	---	(11.4)				---		---
16		11.3				4.2		
17		11.4				4.2		
18	360	10.8				3.8		2.7
19		10.8				3.8		
20		10.8				3.4		
21	330	10.2				3.5		2.6
22		10.2				3.2		
23		9.8				3.2		

Time: Local.
*Probably includes fEs observations.

Table 44

Calcutta, India (22.6°N, 88.4°E) * August 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	9.8				3.0		(2.4)
01		9.6				2.6		
02		9.0				2.2		
03	330	8.6				2.0		2.5
04		8.2				2.2		
06		8.4				2.7		
06	330	8.7				3.2		2.6
07		9.0				3.4		
08		9.2				3.6		
09	325	(9.4)				2.6		(2.4)
10		(9.8)				---		
11		---				---		
12	---	---				---		---
13		---				---		
14		(11.0)				---		
15	345	(10.8)				4.2		---
16		11.0				4.6		
17		11.0				6.2		
18	360	10.9				4.7		---
19		11.2				4.0		
20		10.8				4.2		
21	420	10.4				4.0		---
22		10.0				3.8		
23		10.0				3.4		

Time: Local.
*Probably includes fEs observations.

Table 45

Calcutta, India (22.6°N, 88.4°E) * July 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	8.6				2.0		2.3
01		8.0				2.0		
02		7.0				2.0		
03	330	7.0				2.0		2.6
04		(6.5)				2.1		
05		(6.6)				2.6		
06	230	8.0				3.6		2.6
07		8.8				4.2		
08		9.8				6.0		
09	366	10.4				5.3		2.5
10		11.2				6.2		
11		---				---		
12	---	(11.6)				---		---
13		(11.6)				---		
14		(11.4)				5.0		
15	365	(11.3)				6.0		2.6
16		(11.4)				4.7		
17		(11.8)				4.5		
18	360	(11.6)				4.9		2.1
19		11.5				4.5		
20		11.1				4.4		
21	390	10.8				3.6		2.4
22		(10.2)				3.0		
23		10.0				2.9		

Time: Local.
*Probably includes fEs observations.

Table 46

Calcutta, India (22.6°N, 88.4°E) * June 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	8.8				3.4		2.3
01		8.6				3.2		
02		8.0				1.9		
03	330	7.1				2.0		2.3
04		7.0				1.8		
06		6.9				2.0		
06	360	8.1				2.2		2.4
07		9.8				3.9		
08		10.2				4.2		
09	360	10.8				4.8		2.6
10		11.3				6.2		
11		11.3				---		
12	(360)	(11.2)				---		(2.2)
13		(11.8)				6.3		
14		12.0				6.2		
15	390	11.8				6.0		2.2
16		11.8				4.8		
17		12.4				4.2		
18	375	11.9				6.0		2.2
19		12.0				6.1		
20		11.8				3.9		
21	290	11.0				3.2		2.2
22		11.2				3.0		
23		10.8				2.8		

Time: Local.
*Probably includes fEs observations.

Table 47

Calcutta, India (22.6°N, 88.4°E) * May 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	11.7				1.6		(2.6)
01		(10.8)				1.2		
02		(9.8)				1.4		
03	(300)	8.2				1.2		(2.5)
04		6.9				1.3		
05		(7.3)				2.5		
06	(300)	(9.0)				2.2		(2.6)
07		(10.2)				3.6		
08		(11.0)				4.0		
09	(345)	(11.8)				4.8		2.2
10		(12.0)				6.2		
11		(12.4)				---		
12	390	(12.5)				5.4		2.2
13		(12.6)				---		
14		(12.0)				5.0		
15	(390)	(12.0)				---		(2.3)
16		(12.3)				4.3		
17		(12.5)				4.0		
18	(260)	(12.2)				4.0		(2.3)
19		(11.8)				---		
20		(11.6)				2.2		
21	260	(11.4)				2.9		(2.4)
22		(11.8)				2.1		
23		(11.6)				2.0		

Time: Local.
*Probably includes fEs observations.

Table 48

Calcutta, India (22.6°N, 88.4°E) * April 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(330)	(13.2)				---		(2.6)
01		(12.0)				1.6		
02		(9.0)				1.6		
03	---	(8.2)				---		---
04		(7.6)				---		
05		(7.4)				1.8		
06	(270)	(8.4)				2.6		(2.9)
07		---				3.0		
08		---				4.0		
09	(300)	(14.0)				4.6		(2.2)
10		---				---		
11		(13.2)				---		
12	390	13.0				6.1		2.4
13		13.6				6.1		
14		12.4				---		
15	360	(14.0)				4.4		(2.4)
16		(12.9)				4.0		
17		(13.9)				---		
18	(330)	(14.0)				2.0		(2.4)
19		(14.2)				2.8		
20		(14.2)				2.6		
21	(230)	(14.1)				2.2		(2.4)
22		(14.4)				---		
23		(14.2)				---		

Time: Local.
*Probably includes fEs observations.

Table 49

Calcutta, India (22.6°N, 88.4°E) March 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	(330)	(12.0)				1.0		(2.6)
01		(9.4)				---		
02		(7.8)				1.1		
03	(360)	(6.8)				1.0		(2.5)
04		(6.0)				1.4		
05		(5.8)				---		
06	(360)	(7.0)				1.9		(2.6)
07		(9.8)				2.4		
08		---				2.8		
09	(360)	(13.0)				3.9		(2.4)
10		(14.0)				4.0		
11		13.0				4.5		
12	390	13.2				4.8		2.4
13		13.5				4.2		
14		13.6				4.2		
15	390	13.4				4.0		2.4
16		14.0				4.0		
17		14.0				3.2		
18	(360)	14.0				3.5		(2.4)
19		(14.4)				3.2		
20		(13.8)				2.6		
21	(360)	(13.6)				1.8		(2.6)
22		(13.8)				1.6		
23		(16.4)				2.0		

Time: Local.
*Probably includes fEs observations.

Table 50

Calcutta, India (22.6°N, 88.4°E) February 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	360	13.9				1.9		(2.8)
01		13.4				2.1		
02		11.6				1.8		
03	360	8.4				2.0		(2.8)
04		6.4				1.4		
05		4.9				1.2		
06	382	5.4				2.5		(2.8)
07		7.6				2.9		
08		10.6				3.0		
09	368	13.3				3.2		(2.8)
10		14.7				3.6		
11		14.2				3.9		
12	480	14.3				4.0		---
13		14.8				4.0		
14		14.8				3.9		
15	480	14.8				3.8		(2.6)
16		15.0				3.6		
17		15.0				3.6		
18	390	16.0				3.5		2.6
19		14.9				3.0		
20		15.0				2.6		
21	390	17.2				2.2		---
22		15.4				1.8		
23		15.1				1.9		

Time: Local.
*Probably includes fEs observations.

Table 51

Calcutta, India (22.6°N, 88.4°E) January 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE*	fEs	(M3000)F2
00	375	9.6				2.0		(2.9)
01		8.8				2.0		
02		7.9				1.4		
03	338	6.8				1.0		(3.0)
04		6.2				0.9		
05		5.8				---		
06	338	6.2				---		(3.0)
07		8.4				2.3		
08		11.1				3.0		
09	352	12.9				3.6		2.9
10		13.2				3.8		
11		12.6				3.9		
12	450	13.6				4.2		(2.6)
13		13.4				4.0		
14		13.3				4.0		
15	420	13.6				3.7		2.6
16		14.8				3.6		
17		14.3				3.0		
18	390	13.4				3.0		(2.8)
19		14.2				3.0		
20		14.0				2.1		
21	360	14.7				1.9		2.8
22		12.8				1.8		
23		11.6				2.0		

Time: Local.
*Probably contains fEs observations.

Form adopted June 1946

TABLE 52

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	(300)S	280	250	(310)S	(340)S	(310)S	270	330	300	350	350	320	360	360	350	320	320	240	260	240	230	230	290	(330)S
2	(320)S	(320)S	(330)S	290	280	(260)S	250	240	230	270	310	310	320	330	320	330	230	240	260	240	270	270	(310)SK	270K
3	280K	350K V	330K	330K F	350K	340K	290K	370K	350K	460K	[410]K L	330K	350K	[320]K L	330K	300K	230K	240K	260K	250	A	A	280	280
4	(310)S	(290)S	280	290	320	(320)S	270	240	*260	270	[300]L	320	*300	310	320	300	290	240	250	240	230	(260)S	290	290
5	270	270	260	250	270	300	260	230	230	270	230	260	300	270	320	*280	*240	*240	*240	*230	*240	*250	*260	*280
6	*270	*270	*290	*270	*270	*260	*230	*220	*240	*260	*250	*280	*300	*250	*320	*300	*270	*240	*(250)A	*230	*230	*250	250	270
7	270	270	250	250	260	*270	*250	*240	240	210	220	210	(220)B	320	300	(230)B	230	240	250	230	230	*240	250	260
8	280	300	280	300	290	300	270	250	230	*280	*[280]L	260	290	310	270	280	230	240	260	250	240	*240	*260	*270
9	*280	260	260	260	260	270	240	240	220	220	270	270	310	310	300	230	240	240	240	240	230	240	260	270
10	270	270	270	270	260	250	250	240	230	270	300	250	380	300	250H	310	240	250	250	230	(240)S	240	280	280
11	280	300	270	260	260	270	270	270	240	340	300	270	280	330	B	230	240	250	260	240	250	260	270	300
12	290	280	290	270	300	S	270	250	[illegible]K	350K	350K	410K	440K	C K	C K	380K	360K	320K	280K	250K	250K	280K	290K	310K
13	310K	300K	280K	280K	280K	280K	260	240	220	270	270	270	310	310	320	230	260	250	240	(230)A	250	240	260	270
14	270	280	300	300	280	260	270	240	[250]C	280	280	400	390	330	310	290	240	250	250	230	250	260	280	290
15	300	300	300	310	310	300	300K	270K	340K	380K	430K	410K	390K	290K H	300K H	300K	310K	300K	260	250	260	270	290	310
16	300	300	300	300	270	280	280	240	260	240	280	360	290	320	320	250	300	250	250	230	240	260	270	220
17	280	290	280	290	280	270	270	250	240	250	220	300F	300	330	320	280	270	250	230	220	250	260	270	280
18	280	270	260	260	260	280	260	230	230	260F	270	270	300	[310]L	320	300	240	260	230	220	230	260	270	270
19	270	270	270	240	260	270	250	250	230	250	240	240	280	300	260	250	230	240	230	210	230	250	270	280
20	280	270	250	250	270	270	260	240	220	240	270	300	280	330	300	300	280	250	240	230	220	230	250	270
21	270	280	260	260	270	250	260	230	230	230	250	290	300	280	250	230	230	240	230	220	230	240	250	280
22	290	270	280	290	300	300	270	240	220	220	230	260	300	330	300	230	230	240	230	220	240	250	260	280
23	290	280	270	270	270	270	270	240	240	230	240	280	270	300	220	230	230H	240	230	230	240	270	260	260
24	280	270	280	280	270	260	240	230	230	230	230	270	290	220	280	240	230	260	240	250	290	290K	280K	280K
25	300K	260K	240K	230K	260K	280K	290K	270K	290K H	390K	500K	470K	460K	450K	430K	410K	340K	270K	270K	240K	260K	290K	300K	330K
26	320K	300K	300K	290K	S K	370K	290K	260	230	260	230	300	280	220	230	230	260	250	240	230	240	280	300	290
27	290	280	300	(320)S	(370)S	330	260	230	240	220	220	290	N	N	230	250	260	240	230	230	250	280	300	300
28	310	290	290	300	290	290	270	230	230	230	260	280	250	270	230	230	240	250	230	230	250	270	280	280
29	280	290	270	270	270	270	260	240	230	220	250	280	220	280	270	290	230	240	220	210	240	260	270	290
30	280	300	280	300	310	280	290	250	230	220	250	270	250	220	(250)B	(250)B	240	240	240	230	230	260	[280]C	240
31																								
Median	280	280	280	280	270	280	270	240	230	260	270	280	300	310	300	280	240	240	240	230	240	260	270	280
Count	30	30	30	30	29	29	30	30	30	30	30	30	29	28	28	30	30	30	30	30	29	29	30	30

* SUPPLEMENTARY DATA FROM STERLING, VA
LAT. 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 53

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), September (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75° W Mean Time

Scaled by: B.E.B., J.D., H.W.

Calculated by: B.E.B., J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.7	5.6	5.2	4.3	4.2	4.4	5.2F	6.0	6.8	7.3	(7.2)J	7.9	8.3	8.8	8.7	9.0	8.8	8.8	8.8	9.4	7.6	6.7	(6.0)J	5.5
2	(5.4)J	(4.9)J	(4.8)JS	4.7	4.4	(4.4)JS	6.2	7.6	8.5	9.2	10.0	10.3	9.6	9.7	10.0	9.8	9.6	9.4	9.4	9.5	8.2	7.2	K(7.2)JS	7.3K
3	6.4K	K5.6FY	K(5.3)JF	K(4.8)JF	K(4.1)JF	K(3.6)JF	4.3FK	5.4K	6.0K	6.2K	(7.6)JK	7.6K	7.8K	*7.4K	7.9K	7.6K	7.6K	7.9K	8.0K	8.3	8.0F	(7.0)JF	(6.8)JF	(6.8)JF
4	6.3F	(5.8)JF	(5.2)JF	(4.4)JF	(3.7)JF	(3.4)JF	5.0F	6.3F	*6.8	7.8	8.4	8.7	*8.8	9.0	9.3	9.6	9.4	9.8	9.8	9.2F	8.2F	(7.1)JF	(7.1)JF	(7.6)JF
5	(7.2)JF	6.8	6.2	5.4	5.0	4.7	6.0	(7.6)J	8.3	9.6	9.6	9.4	9.8	9.8	10.0	*10.4	*10.4	*(9.9)JS	*10.0	*9.3	*8.3	*7.6	*7.0	*6.8
6	*6.8	*6.4	*6.3	*(5.9)JS	*5.3	*5.3	*(6.2)JS	*8.5	*8.9	*(9.9)JS	*(9.9)JS	*(9.3)JS	*10.2	*(9.9)JS	*9.9	*10.2	*10.1	*(9.8)S	*10.0	*(9.5)S	*8.6	*(7.7)JS	6.9	(7.3)JF
7	(7.0)JF	(7.1)JF	(7.0)JF	(6.0)JF	(5.2)JF	*(4.8)F	*6.3F	*9.1	9.8	9.7	10.0	10.1	10.4	10.4	10.7	10.7	10.4	10.2	10.8	(10.0)JS	9.0	7.5F	6.7	6.2F
8	(5.6)JF	(5.8)JF	5.5F	5.3F	5.1F	(5.4)JS	(6.6)JF	8.6	8.8	*9.5	*(10.1)JS	10.4	10.2	10.2	10.6	10.0	10.1	9.8	9.7	9.3	8.2	*7.3	*7.0	*6.5F
9	*6.6	6.5	6.1	5.4	5.2	4.9	5.8	7.8	9.1	9.5	9.4F	9.4	9.4	9.5	9.2	9.3	9.5	9.6	9.5	9.2	7.9	7.3	6.7	6.8
10	6.4F	6.1	5.9F	5.8F	5.2	5.0F	5.8	7.4	8.1	9.0	9.6	10.0	10.0	9.8	9.9	9.9	9.6	9.6	9.0	(9.0)S	8.3	7.7	7.2	7.0F
11	6.8F	6.2F	6.1F	6.0F	5.4F	5.0F	5.6	6.8	7.4	7.8	9.2	9.4	9.3	9.6	9.1	9.1	9.0	9.1	8.8	8.7	7.5	6.8	6.3	6.5
12	6.4	6.2	5.8	5.0	(4.4)J	(4.1)J	5.0F	6.8F	7.5K	6.8FK	7.8K	7.1K	6.8K	CK	CK	7.1K	(7.0)SK	7.0K	(7.3)SK	(7.0)SK	K(6.3)JS	(5.7)SK	K(4.8)JS	K(4.7)SF
13	K(4.5)JS	4.7FK	K(4.4)SF	(4.2)JS	K(3.9)SF	3.5FK	(5.7)S	(8.2)JS	(8.7)S	9.8	9.8	9.9	10.3	10.4	10.6	10.4	10.4	10.2	9.7	8.7	8.0	7.3F	7.0F	(6.4)JF
14	6.1F	5.4F	5.4Y	(5.4)S	5.2	(5.1)S	(5.5)S	(7.6)S	[8.4]C	9.5	9.4	8.6	9.4	9.2	9.2	9.0	9.2	9.1	(9.1)S	(8.7)S	7.5F	(6.3)S	(6.0)SF	5.8F
15	5.4	(5.4)JS	(4.9)S	(4.4)S	(4.1)S	3.8	(4.8)SK	(5.8)SK	6.4K	6.5K	6.6K	7.2K	7.7K	(8.0)SK	(8.4)SK	8.5K	8.6K	8.6K	8.3	(8.0)S	(7.2)S	6.6	6.3	(6.1)JS
16	6.1	6.1	5.9	(5.7)JS	5.4	4.9	5.6	(7.2)S	8.6	9.0	9.0	9.2	9.6	9.8	9.7	9.5	9.6	9.1	9.2	(8.6)S	(7.7)S	7.3	(7.0)JS	6.5
17	6.2	(6.0)S	5.8	5.5	5.3	5.1	(6.4)S	8.8	10.0	10.0	9.8	10.0	10.1	10.2	10.3	10.3	10.5	10.2	10.2	9.0	8.0	7.8	7.4	7.0
18	6.8	6.8	6.5	5.8	5.1	4.9	(6.2)JS	9.0	10.2	10.7	11.0H	11.0	10.7	10.8	11.0	11.2	11.4	11.3	10.9	(9.5)S	8.2	7.5	7.4	7.3
19	7.1	6.9	6.6	(5.8)JS	5.4	5.1	(6.5)S	8.3	9.6	(10.3)JS	10.6	11.0	11.0	11.0	10.8	10.5	10.9	11.2	(11.0)S	(9.4)S	8.2	7.5	(7.1)JS	(7.2)SF
20	(6.9)SF	(6.9)SF	6.4F	5.7F	5.2	4.8	6.4	(9.5)S	10.3	11.0	10.7	11.0	11.2	11.5	11.4	11.0	11.0	(11.0)S	11.0	(10.2)S	(8.8)S	(7.8)JS	(7.2)JS	(7.0)SF
21	6.6F	6.4F	6.5F	5.9F	5.7F	(5.3)S	6.7	9.3	10.6	11.3	11.5	11.7	11.6	11.5	11.3	11.3	11.2	11.3	(10.7)S	(9.5)S	(8.7)S	7.8F	(7.1)SF	6.8F
22	(6.7)FS	(6.8)S	6.0F	5.8F	5.6F	5.3	(6.1)SF	(8.8)S	10.0	11.8	11.7	11.0	10.8	11.4	11.3	11.2	10.8	10.8	(10.6)S	(9.2)S	8.4	7.8	7.2F	6.6
23	(6.4)SF	6.8F	6.5F	6.1F	5.6F	5.2F	(6.6)SF	9.2F	10.2	11.0	10.4	10.8	11.2	11.6	11.5	11.5	11.4	11.3	(10.6)S	(9.3)JS	(8.1)SF	(8.3)JS	7.6F	6.9F
24	6.8F	6.6F	6.5F	6.4F	6.2F	(6.1)JF	(6.9)SF	(9.1)S	9.8	11.0	11.1	11.1	11.5	11.5	12.0	11.7	11.3	11.0	(10.8)S	9.2	8.6	8.9K	8.3K	8.0K
25	(8.2)SK	8.0K	7.2K	6.7K	(6.5)SK	5.5K	5.6K	(6.9)SK	6.8K	6.4K	(6.1)SK	6.5K	6.6K	6.6K	6.6K	6.8K	7.0K	6.9K	7.3K	6.8K	6.2K	5.6K	4.8K	4.8FK
26	4.3K	K(4.1)JS	4.0K	3.8K	(2.8)SK	K(2.5)JS	(4.7)SK	7.5	9.4	10.5	10.4	11.5	11.6	11.0	10.8	10.4	9.9	9.5	9.5	(7.9)S	(7.2)S	6.6	6.5	(6.2)JS
27	6.1	5.8	(4.7)JS	(3.5)F	(4.1)F	(4.2)JF	5.8	(7.8)S	8.7	(9.9)S	(9.7)S	(10.6)S	M	M	11.3	11.0	10.8	10.2	(9.4)JS	(8.1)JS	(7.2)JS	6.6	6.4	(7.2)SF
28	(6.7)FS	5.9F	5.6F	5.0F	4.6F	4.3F	(5.3)JS	(6.8)S	(8.1)S	8.9	9.6	10.0	10.0	10.0	10.0	9.9	9.9	10.1	9.2	8.0	6.8	6.4	6.3F	6.1F
29	5.9F	5.4F	5.4F	5.2F	4.9F	4.9F	(6.2)JS	(8.5)S	9.3	10.0	10.7	10.8	11.0	10.9	10.8	11.0	10.9	10.9	(10.0)S	(8.2)SF	(7.2)SF	(6.9)SF	(6.5)SF	(6.5)SF
30	5.9F	5.9F	5.1F	5.0F	4.9F	(4.9)S	(5.7)SF	(8.3)S	8.8	9.1	10.1	10.6	11.3	11.4	11.4	11.3	10.2	10.4	9.5	(8.8)S	7.6	(6.9)SF	(7.2)SF	(7.1)S
31																								
Median	6.4	6.1	5.8	5.4	5.2	4.9	5.8	7.8	8.8	9.5	9.8	10.0	10.1	10.1	10.3	10.2	10.1	9.8	9.6	(9.1)	8.0	7.3	7.0	6.8
Count	30	30	30	30	30	30	30	30	30	30	30	30	29	28	29	30	30	30	30	30	30	30	30	30

* SUPPLEMENTARY DATA FROM STERLING, VA.
LAT. 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 54

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by B.E.B., JD., H.W.

Calculated by: B.E.B., J.D.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130
1	5.7	5.6	4.7	4.3	4.4	4.3	5.8 F	6.6 F	(6.5) FS	7.4	*7.6	8.1
2	(5.1) J	(4.8) JS	4.7	4.4	4.2	(5.2) JS	(7.0) JS	(8.4) S	9.0	9.6	10.2	9.6
3	6.0 FK	5.8 FK	K(5.5) JF	K[4.4] FS	K(4.0) JF	(3.6) FK	5.1 K	5.7 K	5.8 K	7.2 K	7.4 K	7.6 K
4	(6.2) JF	(5.5) JF	(5.0) JF	(3.8) JF	(3.7) JF	(3.9) JF	(5.8) F	7.0 F	7.3 F	8.4	8.7	8.7
5	7.2 F	6.5	5.8	5.1	4.8	5.0	6.9	7.9	8.6	9.4	9.2	9.8
6	*6.7	*6.4	*(6.0) JS	*(5.7) JS	*(5.2) JS	*5.5	*7.8	*8.9	*(9.8) JS	*9.7	*10.2	*(10.2) JS
7	(7.0) JF	(7.0) JF	(6.2) JF	(5.6) JF	S F	*(5.0) F	*(7.9) JS	9.8 H	9.8	10.0	10.0	10.2
8	(5.5) JF	5.7 F	5.4 F	5.5 F	(5.2) JF	F S	F S	9.0	9.0	*9.7	10.0	10.5
9	*6.6	6.2	5.8	5.4	5.0	5.0	7.0	8.5	9.6	9.4	9.6	9.4
10	6.2 F	6.1 F	5.9 F	5.6 F	5.2 F	5.0 F	6.7	8.0	8.4	8.9	9.6	9.9
11	7.2 F	5.9 F	6.2 F	5.8 F	5.4 F	5.3 F	5.8 F	7.2	7.4	8.8	9.8	9.4
12	6.3	6.0	(5.6) J	4.8	4.3	[4.6] SF	6.2 F	6.4 FK	7.5 K	7.8 K	7.2 K	7.2 K
13	4.8 FK	4.9 K	4.5 FK	K(4.0) SF	K(3.7) FS	(4.2) SK	(7.3) S	(8.6) S	(9.8) S	(9.7) S	9.8	9.8
14	6.0 F	5.5 F	5.4 F	(5.2) JS	(5.2) S	(5.0) JS	(6.8) S	(8.4) H	8.5	9.3	8.3	8.6
15	5.5	(5.2) S	(4.5) JS	4.3	4.2	K(4.0) JS	5.4 K	6.2 K	6.4 K	6.5 K	(6.6) SK	7.4 K
16	6.3	5.6	(5.9) S	5.6	5.1	(4.9) S	6.6	8.1	8.9	8.8	9.2	9.4
17	6.0	5.9	5.6	5.4	(5.2) JS	(5.3) JS	7.8	9.3	10.0	9.7	10.0	10.1
18	6.8	6.6	6.1	5.4	5.0	(5.2) JS	(7.3) H	9.2	10.4	10.6	10.6	10.8
19	7.0	6.6	6.4	5.7	(5.4) JS	(5.5) S	(8.2) S	(9.5) S	10.1	10.4	10.6	10.9
20	7.0 F	6.8 F	6.1 F	5.4 V	(5.1) S	5.3	7.7	9.8	10.8	10.7	10.7	11.0
21	6.6 F	6.5 F	6.2 F	5.8 F	5.5	5.5	8.2	10.0	(11.0) S	11.0	11.7	11.3
22	(7.0) S	(6.6) S	5.9 F	5.7 F	5.4	(5.3) JS	(7.1) S	9.7	11.4	11.9	11.2	10.5
23	(6.8) SF	(6.6) S	6.4 F	5.7 F	5.5 F	5.3 F	7.8 F	9.8	10.6	10.8	10.8	11.0
24	6.8 F	6.1 F	6.3 F	6.4 F	6.4 F	(6.3) SF	(7.9) SF	9.4	10.5	11.4	11.3	11.3
25	8.1 K	(7.9) SK	(6.9) SK	K(6.6) JS	5.9 K	K(5.3) JS	6.2 K	7.3 K	(6.5) SK	6.0 K	6.3 K	6.4 K
26	K(4.1) JS	(3.9) SK	3.8 K	3.3 K	(2.4) SK	K(3.2) JS	(6.3) SK	(8.9) S	9.9	10.9	(10.7) JS	11.6
27	6.0	(5.2) S	(4.2) JF	3.5 F	(4.4) FS	(4.8) FS	6.8	9.0	9.0	9.9	(10.5) S	M
28	6.2 F	5.9 F	5.3 F	4.8 F	4.4 F	(4.3) JF	(6.0) S	(7.5) S	(8.3) S	9.0	9.6	9.9
29	5.8 F	5.7 F	5.5 F	5.0 F	4.9 F	F(5.3) JS	7.0	(9.1) S	9.5	10.3	10.3	10.6
30	5.7 F	5.5 F	5.3 F	4.8	5.1 F	(5.3) SF	(6.7) S	8.4	(8.9) S	9.5	10.4	10.8
31												
Median	6.2	5.9	5.7	5.4	5.1	(5.0)	6.9	8.6	9.0	9.6	10.0	9.9
Count	30	30	30	30	29	29	29	30	30	30	30	29

Day	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	8.6	*8.7	9.2	*8.6	9.0	8.6	8.9	8.8	7.2	6.3	5.6	5.4
2	9.6	9.8	9.6	9.5	9.2	9.2	9.6	8.7	(8.0) J	K(7.4) JS	7.3 K	7.2 K
3	8.0 K	7.8 K	8.0 K	7.7 K	7.8 K	8.0 K	8.3 K	8.2 F	(7.2) JF	(7.0) JF	(7.0) JF	6.6 F
4	9.0	9.0	9.4	9.7	9.6	9.8	9.8 F	8.9 F	7.6 F	(7.5) JF	(7.5) JF	(7.5) JF
5	10.0	9.8	*10.0	*10.6	*(10.0) JS	*(10.0) S	*7.9	*8.5	*(8.1) JS	*7.2	*6.9	*6.8
6	*(9.8) JS	*(9.9) JS	*10.0	*10.2	*(10.0) S	*(9.9) JS	*(9.9) SP	*(8.9) S	*(8.1) J	*(7.2) S	6.9	(7.2) JF
7	10.4	10.5	10.5	10.2	10.5	10.6	(10.4) JS	9.4	8.0 F	7.0	6.4 F	6.0 F
8	10.2	10.4	10.4	10.0	10.2	9.5	9.5	8.8	7.8	*(7.2) JS	*(6.7) F	*6.5
9	9.2	9.4	9.2	9.4	9.4	9.6	9.4	8.6	7.6	6.8	6.7	6.7
10	10.0	10.0	9.9	9.6	9.7	9.5	9.4	8.5	8.1	(7.3) S	7.2	7.0 F
11	9.4	9.2	9.1	9.0	8.9	9.0	9.1	7.9	7.0 F	6.6	6.4	6.4
12	6.8 K	[7.0] CK	7.2 K	7.2 K	(7.0) SK	(7.0) SK	(7.4) SK	(6.8) SK	(6.0) SK	5.6 K	4.7 FK	4.7 FK
13	10.2	10.3	10.5	10.3	10.4	9.8	9.1	8.3	7.7 F	7.3 F	6.7 F	6.3 F
14	9.5	9.2	[9.1] C	9.2	9.2	9.2	(8.8) S	(7.9) S	7.2	(6.1) SF	(6.0) SF	5.6
15	8.0 K	(8.0) SK	8.4 K	8.4 K	8.6 K	8.7 K	8.0	(7.9) S	(7.0) S	(6.4) S	(6.1) S	6.2
16	9.6	9.8	9.7	9.2	9.1	9.4	(9.1) S	8.2	7.5	7.2	6.8	6.3
17	(10.2) B	10.4	10.2	10.3	10.3	10.2	9.4	8.4	8.0	7.5	(7.1) S	(7.2) S
18	11.0	11.0	11.2	11.2	11.4	11.0	(10.2) JS	8.7	7.7	7.5	(7.1) JS	(7.2) S
19	11.0	10.0	10.6	10.8	10.7	11.1	(10.8) S	(8.8) S	7.6	7.3	(7.2) S	(7.1) SF
20	11.0	11.4	11.4	10.9	(11.1) S	(11.1) S	(10.7) S	(9.2) S	(8.2) S	(7.4) S	(7.3) S	6.7 F
21	(11.6) S	11.5	11.2	11.1	11.3	11.0	(10.5) S	(9.0) S	8.4	(7.3) FS	(6.9) FS	(6.9) FS
22	11.0	11.4	11.4	11.0	10.7	10.8	(10.2) S	(8.5) S	8.1	7.6	6.8	6.5 F
23	11.3	11.5	11.4	11.4	(11.4) S	(11.1) S	(9.8) S	8.7	8.1 F	S(7.8) FJ	(7.5) SF	6.8 F
24	11.5	11.8	11.8	11.3	11.0	10.9	10.0	8.8	8.4 K	8.7 K	8.1 K	8.0 K
25	6.5 K	6.6 K	6.6 K	6.7 K	6.9 K	7.1 K	K(7.2) JS	6.5 K	5.8 K	5.2 K	4.8 K	(4.5) SK
26	11.3	11.8	10.6	10.4	9.8	9.6	(8.8) S	(7.8) S	(6.9) S	(6.4) JS	6.3	6.3
27	M	11.2	11.2	11.0	10.6	10.0	(8.2) JS	(7.7) JS	(7.0) JS	(6.7) P	(7.0) P	6.8 F
28	[10.0] C	10.0	9.9	(10.3) JS	10.0	9.8	9.1	7.2	6.6	6.3	6.4 F	6.1 F
29	10.9	11.0	10.9	11.1	10.8	(10.5) S	(8.9) S	(7.7) SF	(6.9) SF	(6.7) SF	6.3 F	6.0 F
30	10.9	11.3	10.8	10.4	10.4	9.8	(9.3) S	8.3	(7.4) S	(6.8) FS	(7.4) SF	6.6
31												
Median	10.0	10.0	10.1	10.2	10.0	9.8	(9.4)	8.5	7.6	7.2	6.8	6.6
Count	29	30	30	30	30	30	30	30	30	30	30	30

* SUPPLEMENTARY DATA FROM STERLING, VA.
LAT. 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 55

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B. J.D.

Calculated by: B.E.B. J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	240	240	240	220	210	(210)B	210	230	240	240	Q	Q					
2							Q	Q	Q	200	220	210	220	220	230	240	Q	Q	Q					
3							Q K	250K	240K	220K	210K	220K	220K	220K	220K	210K	Q K	Q K	Q K					
4							Q	Q	*230	220	220	220	*200	210	220	230	230	Q	Q					
5							Q	Q	Q	210	210	210	210	210	220	*240	*Q	*Q	*Q					
6							*Q	*Q	*220	*210	*200	*200	*190H	*200	*220	*230	*240	*Q	*Q					
7							*Q	*Q	230	230H	200H	200	210H	230	(230)B	230	230	240	Q					
8							Q	Q	Q	*210	*210	220	(220)B	B	(230)B	230	Q	Q	Q					
9							Q	Q	Q	Q	200	200	220	200	240	Q	Q	Q	Q					
10							Q	Q	Q	210	220	210	200	230	210	220	230	Q	Q					
11							Q	Q	Q	220	220	220	210	210	Q	Q	Q	Q	Q					
12							Q	Q	Q K	220K	220K	220K	250K	C K	C K	240K	230K	260K	Q K					
13							Q	Q	Q	220	210H	210H	200H	230	220	Q	230	Q	Q					
14							Q	Q	[220]C	220	200H	230H	210	220	210	220	Q	Q	Q					
15							Q K	Q K	250K	210K H	210K	B K	210K H	210K	220K	Q K	Q K	Q K	Q					
16							Q	Q	220	Q	200	200	200	260	(230)B	Q	230	Q	Q					
17							Q	Q	230	220	Q	220	210	230	230	230	250	Q	Q					
18							Q	Q	Q	210	210	200	210	220	230	230	Q	Q	Q					
19							Q	Q	Q	210	200	200	200	230	220	220	Q	240	Q					
20							Q	Q	Q	220	210	210	210	210	230	230	230	Q	Q					
21							Q	Q	Q	Q	210	210	210	210	230	Q	Q	Q	Q					
22							Q	Q	Q	Q	Q	200	200	200	220H	Q	Q	Q	Q					
23							Q	Q	230	Q	210	200H	210	230	Q	Q	Q	Q	Q					
24							Q	Q	Q	Q	Q	210	210H	Q	220	Q	Q	Q	Q					
25							Q K	Q K	240K	230K H	230K	220K	230K	230K	230K	250K	240K	Q K	Q K					
26							Q K	240	Q	220	Q	210	210	Q	Q	Q	240	Q	Q					
27							Q	Q	Q	Q	Q	230	M	M	Q	Q	Q	Q	Q					
28							Q	Q	Q	Q	220	200	210	210	Q	Q	Q	Q	Q					
29							Q	Q	Q	Q	210	220	Q	210	220	230	Q	Q	Q					
30							Q	Q	Q	Q	210	200	210	Q	Q	Q	Q	Q	Q					
31																								
Median								—	230	220	210	210	210	215	220	230	230	—						
Count								3	11	20	25	29	28	24	23	17	12	3						

* SUPPLEMENTARY DATA FROM STERLING, VA
LAT. 39.0°N, LONG. 77.5° W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 56

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

foF1 (Characteristic), Mc (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., H.W., J.D.

Calculated by: B.E.B., J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	L	L	50	[5.1]L	(51)P	(58)P	(5.7)P	(5.4)P	L	L	Q	Q					
2							Q	Q	Q	(4.6)P	(49)P	L	L	(54)P	(56)P	L	Q	Q	Q					
3							Q K	L K	(4.5)PK	50K	[52]LK	(5.3)PK	54K	L K	L K	L K	Q K	Q K	Q K					
4							Q	Q	*L	L	L	L	*L	(5.1)P	(53)P	(52)P	L	Q	Q					
5							Q	Q	Q	L	L	L	L	L	*L	*L	*Q	*Q	*Q					
6							*Q	*Q	*L	*L	*L	*L	*L	*L	*L	*L	*L	*Q	*Q					
7							*Q	*Q	L	L	(55)P	L	L	L	L	L	L	L	Q					
8							Q	Q	Q	*L	*L	L	L	L	L	L	Q	Q	Q					
9							Q	Q	Q	Q	L	(50)P	L	L	L	Q	Q	Q	Q					
10							Q	Q	Q	L	L	L	L	L	L	L	L	Q	Q					
11							Q	Q	Q	(55)P	[54]L	(52)P	(52)P	L	Q	Q	Q	Q	Q					
12							Q	Q	Q K	54K	[52]LK	(51)PK	56K	C K	C K	(52)PK	L K	L K	Q K					
13							Q	Q	Q	L	L	(47)P	(59)P	[59]L	(59)P	Q	L	Q	Q					
14							Q	Q	L	(4.5)P	[52]L	(60)P	(5.9)P	(55)P	L	L	Q	Q	Q					
15							Q K	Q K	(48)PK	(50)PK	52K	(55)SK	5.5K	(49)PK	(4.7)PK	Q K	Q K	Q K	Q					
16							Q	Q	L	Q	(49)P	(4.5)P	L	L	L	Q	L	Q	Q					
17							Q	Q	Q	L	Q	L	L	(66)P	[5.7]L	(48)P	L	Q	Q					
18							Q	Q	Q	L	49	5.5	L	L	(63)P	L	Q	Q	Q					
19							Q	Q	Q	L	L	L	L	L	L	L	Q	L	Q					
20							Q	Q	Q	L	L	L	L	L	L	L	L	Q	Q					
21							Q	Q	Q	Q	L	L	L	L	L	Q	Q	Q	Q					
22							Q	Q	Q	Q	Q	(4.7)P	L	L	L	Q	Q	Q	Q					
23							Q	Q	Q	Q	L	L	L	L	Q	Q	Q	Q	Q					
24							Q	Q	Q	Q	Q	(5.1)P	(54)P	Q	L	Q	Q	Q	Q					
25							Q K	Q K	46K	54K	50K	49K	5.1K	5.2K	5.1K	49K	L K	Q K	Q K					
26							Q K	L	Q	L	Q	L	L	Q	Q	Q	L	Q	Q					
27							Q	Q	Q	Q	Q	L	M	M	Q	Q	Q	Q	Q					
28							Q	Q	Q	Q	L	L	L	L	Q	Q	Q	Q	Q					
29							Q	Q	Q	Q	L	L	Q	L	L	L	Q	Q	Q					
30							Q	Q	Q	Q	L	L	L	Q	Q	Q	Q	Q	Q					
31																								
Median								–	–	50	(5.2)	(5.1)	(5.5)	(5.4)	(5.5)	–	–	–						
Count									3	8	11	13	9	8	8	4								

* SUPPLEMENTARY DATA FROM STERLING, VA
LAT. 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min
Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 57

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

h' E (Characteristic), Km (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by B. E. B., J. D.

Calculated by B. E. B., J. D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							130	110	110	110	120	120	120	120	120	110	120	120	120					
2							120	110	110	110	110	100	100	100	110	110	120	120	120					
3							120K	110K	110K	100K	110K	110K	110K	110K	110K	110K	110K	110K	130K					
4								120	*110	110	100	100	*110	110	110	110	110	110	130					
5								110	120	110	110	110	100	110	110	*100	*110	*110	*120					
6							*(110)A	*110	*100	*100	*(100)A	*(110)A	*100A	*(120)A	*110	*110	*110	*110	*110					
7							*(150)A	*(110)A	110	110	110	110	100	110	110	120	120	120	120					
8							130	110	110	*100	*100	120	110	110	100	100	100	110	100					
9							120	100	110	110	110	110	110	100	120	110	110	120	120					
10								120	120	110	(110)A	110	(110)A	110	120	110	110	110	(120)S					
11							120	110	110	110	110	110	110	120	B	110	110	120	130					
12							120	110	110K	110K	110K	110K	110K	CK	CK	110K	110K	110K	120K					
13							130	110	110	110	110	B	110	B	110	110	120	110	(110)A					
14							180	110	110	120	110	110	110	120	110	120	110	110	120					
15							(160)SK	110K	120K	110K	110K	BK	110K	110K	120K	110K	110K	110K	110					
16							120	120	110	(120)A	(120)A	(120)A	120	120	B	120	110	110	130					
17							B	110	(120)A	120	120	120	120	B	110	110	110	110	(120)S					
18							B	(120)A	(120)A	110	120	110	110	110	110	110	110	110	110					
19							(110)A	110H	110	110	110	110	(110)B	110	(120)A	(120)A	(120)A	(100)A	(100)A					
20							B	110	(110)A	(120)A	120	110	110	110	110	110	110	110	S					
21							S	(120)A	120	(120)A	110	120	120	120	110	110	110	110	B					
22							S	(130)A	(120)A	(120)A	(120)A	110	110	110	110	110	(110)A	110	S					
23							(110)A	120	110	120	110	120	110	110	110	110	110	130	S					
24							(110)A	120	110	110	110	110	110	110	(110)A	B	110	110	(130)A					
25							(120)SK	(120)AK	(120)AK	(120)AK	110K	110K	110K	110K	110K	110K	110K	110K						
26							150K	(110)A	(110)A	(130)A	(120)A	(120)A	(120)A	120	120	120	120	130	S					
27							130	130	120	110	110	120	M	M	120	(110)B	120	120						
28							(140)S	110	120	130	130	120	120	110	120	120	120	130	(120)A					
29							S	120	110	110	(110)S	120	(120)A	110	120	110	110	120	(120)A					
30								(120)A	(120)A	120	110	110A	110	110	110	110	120	120						
31																								
Median							120	110	110	110	110	110	110	110	110	110	110	110	120					
Count							20	30	30	30	30	28	29	26	27	29	30	30	22					

* SUPPLEMENTARY DATA FROM STERLING, VA.
LAT. 39.0°N, LONG. 77.5° W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 58

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

Form adopted June 1946

foE (Characteristic), Mc (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B. E. B., J. D., H. W.

Calculated by: B. E. B., J. D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							1.9	2.5	[3.0]^{B}	3.6	3.8	3.8	3.8	(3.9)^{B}	(3.8)^{B}	3.7	3.3	2.9	2.0					
2							B	2.5	2.8	3.5	3.6	3.6	3.9	3.8	3.7	3.6	3.2	2.7	2.6					
3							2.0^{K}	2.4^{K}	3.0^{K}	3.2^{K}	3.6^{K}	3.7^{K}	3.7^{K}	3.9^{K}	[3.7]$^{A}_{K}$	3.5^{K}	3.1^{K}	2.7^{K}	2.2^{K}					
4								2.7	*3.2	3.4	3.6	3.7	*3.9	3.8	(3.6)^{B}	3.4	3.1	2.7	1.9					
5								2.5	3.0	3.4	3.5	3.9	3.8	(3.6)^{B}	3.4	*3.6	*3.2	*2.7	*2.1					
6							*A	*2.7	*2.8	*3.0	*3.6	*4.0	*3.9	*3.9	*3.7	*3.5	*3.2	*3.0	*1.8					
7							*(1.9)^{A}	*(2.6)^{A}	2.8	[3.1]^{A}	3.4	B	B	(3.8)^{B}	[3.6]^{B}	3.4	3.2	2.7	2.0					
8							1.8	2.6	3.1	*3.4	*3.3	B	B	B	B	B	3.3	2.6	1.9					
9							1.8	2.5	2.9	3.2	3.6	3.7	3.7	[3.7]^{B}	3.7	3.5	3.2	2.6	B					
10								B	(3.2)^{B}	B	A	(3.3)^{A}	[3.6]^{A}	(3.9)^{H}	(3.8)^{P}	3.7	3.3	(2.8)^{P}	(1.9)^{H}					
11							1.9	2.7	3.1	3.5	3.6	3.7	3.6	B	B	3.4	3.2	2.7	1.8					
12							1.9	2.6	3.0^{K}	3.5^{K}	3.7^{K}	[3.7]$^{B}_{K}$	3.7^{K}	C^{K}	C^{K}	3.5^{K}	3.2	2.7^{K}	1.9^{K}					
13							1.9	2.7	3.2	3.6	(3.7)^{B}	[3.8]^{B}	(3.8)^{B}	[3.8]^{B}	3.7	3.5	3.3	2.7	A					
14							2.0	[2.6]^{B}	[3.2]^{C}	3.5	(3.7)^{B}	3.9	4.0	4.0	3.8	(3.5)^{B}	3.2	2.7	2.2					
15							1.8^{K}	2.7^{K}	3.2^{K}	3.5^{K}	3.7^{K}	[3.8]$^{B}_{K}$	3.9^{K}	(4.0)$^{P}_{K}$	3.9^{K}	3.6^{K}	3.3^{K}	2.8^{K}	(2.0)^{P}					
16							(1.9)^{B}	2.7	2.8	3.6	3.7	3.9	3.9	(4.0)^{B}	[4.0]^{B}	3.9	3.4	2.8	2.0					
17							B	2.7	3.2	3.7	3.8	4.0	4.0	[4.0]^{B}	3.9	3.8	3.3	2.8	(1.9)^{S}					
18							B	2.6	3.0	3.4	(3.7)^{P}	4.0	(4.0)^{B}	4.1	3.8	3.5	(3.2)^{S}	S	B					
19							A	2.5	3.2	3.5	3.9	3.8	4.0	4.0	(3.8)^{B}	3.5	3.3	(2.6)^{A}	A					
20							B	2.6	[3.0]^{A}	3.4	3.7	(3.9)^{B}	(3.8)^{B}	(3.8)^{B}	3.8	3.4	(3.2)^{S}	2.2	1.7					
21							S	(2.5)^{S}	(3.2)^{S}	3.4	3.7	3.8	3.9	3.9	3.6	3.4	3.1	(2.4)^{S}	B					
22							S	2.5	3.1	3.5	(3.8)^{B}	3.9	(3.8)^{B}	(3.8)^{B}	3.6	3.5	3.1	(2.6)^{S}	S					
23							A	(2.5)^{S}	3.2	(3.4)^{S}	3.6	3.8	3.9	(3.6)^{B}	3.7	3.4	3.1	(2.6)^{S}	S					
24							A	(2.5)^{S}	3.0	3.4	3.6	(3.8)^{B}	3.7	3.7	3.6	[3.4]^{B}	3.2	(2.5)^{S}	A					
25							(1.7)$^{S}_{K}$	2.5^{K}	2.9^{K}	3.2^{K}	3.5^{K}	(3.5)$^{B}_{K}$	3.6^{K}	3.6^{K}	3.5^{K}	3.1^{K}	2.9^{K}	2.4^{K}						
26							1.9^{K}	2.4	(3.0)^{A}	3.3	(3.4)^{S}	(3.5)^{B}	3.6	3.7	3.5	3.4	2.9	2.5	S					
27							1.8	(2.3)^{S}	2.9	(3.2)^{S}	3.7	(3.8)^{B}	M	M	(3.6)^{B}	3.5	2.8	2.6						
28							(1.7)^{S}	2.5	3.0	3.3	3.5	(3.6)^{B}	(3.7)^{B}	3.5	3.5	3.2	2.9	(2.5)^{S}	A					
29							S	2.5	2.8	(3.3)^{S}	3.5	(3.4)^{B}	3.5	3.6	3.6	3.2	2.8	2.2	A					
30								2.3	[2.7]^{A}	3.1	3.4	[3.4]^{A}	3.4	3.4	B	B	(3.0)^{B}	2.2						
31																								
Median							1.9	2.5	3.0	3.4	3.6	3.8	3.8	3.8	3.7	3.5	3.2	2.7	2.0					
Count							15	29	30	29	29	28	27	26	26	28	30	29	16					

* SUPPLEMENTARY DATA FROM STERLING, VA.
LAT. 39.0° N, LONG. 77.5° W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 59

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C.

Form adopted June 1946

IONOSPHERIC DATA

ES (Characteristic), Mc,Km (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., H.W.

Calculated by: B.E.B., J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	G	4.3/110	100/100	G	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	G	G	G	48/130	56/120	4.1Y/110	42Y/120	G	G	G	G	G	G	G	G	G	64Y/110	G	G	G	G
3	G	G	G	G	G	G	G	3.6/120	3.8Y/130	42Y/130	11.2/130	5.8Y/120	G	G	43/130	G	G	G	G	G	62/110	46/110	G	G
4	G	G	G	G	G	2.4/120	2.0/120	70Y/10	C	G	G	G	C	G	G	G	G	31/130	33Y/20	G	G	G	G	G
5	G	G	G	G	G	3.0/130	G	G	G	G	G	80Y/100	G	G	G	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G
7	G	G	G	G	G	C	C	C	G	56/110	G	G	G	G	G	G	G	G	G	30/110	G	G	G	G
8	G	G	G	G	G	G	G	G	G	C	C	G	G	G	G	G	G	G	G	G	G	G	G	G
9	G	G	G	G	G	27/120	76/120	G	G	G	G	G	G	G	G	G	G	G	G	2.3/100	24/100	G	56/120	3.7/110
10	29/110	27/110	G	23/110	G	G	G	G	42/130	6.3Y/110	36/110	3.6/110	3.6Y/10	G	G	G	G	G	21/130	G	G	G	G	G
11	G	G	G	G	G	G	G	9.0/110	7.8Y/10	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
12	G	G	G	G	G	G	G	66Y/130	12.4/100	G	G	G	G	C	C	G	G	G	G	G	G	G	G	G
13	G	G	G	G	G	24Y/120	G	G	G	G	G	2.9/100	G	G	G	G	G	37/120	31Y/110	31/110	G	G	G	G
14	G	2.1/110	G	G	G	G	(4.2)S/170	4.4/170	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
15	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
16	G	G	2.5Y/120	G	G	G	G	20/110	76/120	28/110	3.0/110	2.9/110	G	G	G	G	G	G	G	2.8Y/10	G	G	G	G
17	G	2.4/110	G	G	G	G	G	G	3.8/110	2.1/110	28/110	G	G	G	G	G	G	G	G	2.5/100	G	G	G	G
18	G	G	G	G	G	G	G	2.2/100	2.1/110	G	G	G	22/100	G	G	48/130	4.6/130	1.9/120	G	G	G	G	G	G
19	G	G	G	G	G	G	2.3/110	3.8/120	6.5/100	G	G	G	G	G	3.0/100	28/100	3.7/100	50/100	2.3/100	22/110	3.0Y/10	G	G	G
20	G	G	G	G	2.8/120	G	G	G	4.6/110	2.9/110	25/100	G	G	G	G	G	G	34/120	G	G	G	G	G	G
21	G	G	G	G	G	G	G	2.1/110	2.4/110	28/110	G	G	G	G	G	G	G	G	G	G	G	G	G	G
22	G	G	G	G	G	G	G	2.0/110	25/110	2.8/110	3.0/110	G	G	G	G	68/110	30/110	G	G	G	G	G	G	G
23	G	G	G	G	G	G	2.6Y/10	G	G	G	G	G	G	G	G	G	G	1.9/120	G	G	G	G	G	G
24	G	G	G	G	G	G	3.0/110	G	G	G	G	G	G	G	3.0/110	G	G	G	1.7/130	G	G	G	G	G
25	G	G	G	G	G	G	G	18/110	2.5/110	2.8/110	G	G	G	G	G	G	G	G	G	G	G	G	G	G
26	G	G	G	25/120	3.1/120	G	G	2.2/110	3.6/110	30/110	26/110	30/110	2.8/110	2.2/110	7.0/120	G	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	M	M	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	1.9/120	1.9/110	2.1/120	G	G	G
29	G	G	G	G	G	G	G	G	G	G	G	G	24/100	G	G	G	G	G	3.4/120	29/110	G	G	G	G
30	G	G	G	2.7/130	G	G	G	22/120	2.8/120	G	G	3.3/110	G	G	G	G	G	G	G	G	G	G	G	G
31																								
Median	**	**	**	**	**	**	**	**	2.2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	29	29	29	29	29	28	28	28	28	28	28	29	27	27	28	28	28	28	28	28	28	28	29	29

** MEDIAN fES LESS THAN MEDIAN foE, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 60

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

(M1500)F2 (Characteristic), ____ (Unit), September (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: B.E.B., J.D., H.W.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: B.E.B., J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.7	1.8	1.9	1.7	1.6	1.6	1.8F	1.8	2.0	.9	(1.8)J	1.9	1.8	1.8	1.8	1.9	1.8	1.9	2.0	2.0	1.9	1.7	(1.7)J	1.6
2	(1.6)J	(1.6)J	(1.6)JS	1.7	1.7	(1.9)JS	2.1	2.2	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.8	K(1.7)JS	1.7K
3	1.7K	K1.6FV	K(1.5)JF	K(1.6)JF	K(1.6)JF	K(1.7)JF	1.8FK	1.8K	1.9K	1.7A	(1.8)JK	1.8K	1.9K	*1.8K	1.9K	1.9K	1.9K	1.9K	1.9K	1.9	1.9F	(1.8)JF	(1.7)JF	(1.7)JF
4	1.8F	(1.7)JF	(1.6)JF	(1.4)JF	(1.6)JF	(1.6)JF	1.9F	2.0F	*2.2	2.1	1.9	2.0	*1.9	1.9	1.9	1.8	1.9	1.8	1.9	2.0F	1.8F	(1.7)JF	(1.6)JF	(1.6)JF
5	(1.7)JF	1.8	1.9	1.8	1.8	1.8	2.1	(2.1)J	2.1	2.1	2.0	1.9	1.9	1.9	1.9	*1.8	*1.9	*(1.9)JS	*2.0	*2.0	*1.8	*1.8	*1.8	*1.7
6	*1.7	*1.7	*1.7	*(1.8)JS	*1.7	*1.7	*(2.1)JS	*2.1	*2.1	*(2.2)JS	*(2.0)JS	*(2.2)JS	*1.9	*(1.9)JS	*1.9	*1.9	*1.9	*(1.9)S	*1.9	*(1.9)S	*1.9	*(1.9)JS	1.9	(1.7)JF
7	(1.8)JF	(1.7)JF	(1.6)JF	(1.8)JF	(1.7)JF	*(1.7)F	*1.9F	*2.1	2.2	2.1	2.0	1.9	1.8	1.8	1.9	1.8	1.9	1.8	1.8	(2.0)JS	1.9	1.8F	1.7	1.7F
8	(1.7)JF	(1.6)JF	1.7F	1.7F	1.6F	(1.6)JS	(2.0)JF	2.1	2.3	*2.1	*(2.1)JS	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	*1.8	*1.7	*1.7F
9	*1.7	1.8	1.8	1.9	1.9	1.8	2.0	2.2	2.0	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.8	1.8	1.8
10	1.9F	1.8	1.8F	1.8F	1.9	2.0F	2.1	2.2	2.1	2.2	1.9	1.9	1.8	1.8	1.9	1.8	1.9	1.9	2.0	(1.9)S	1.8	1.8	1.8	1.7F
11	1.8F	1.7F	1.7F	1.7F	1.7F	1.7F	2.0	2.0	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.9	1.9	2.0	1.8	1.8	1.6	1.7
12	1.7	1.7	1.7	1.8	(1.6)J	(1.7)J	2.0F	2.2F	2.0K	1.6FK	1.6K	1.7K	1.7K	CK	CK	1.7K	(1.8)SK	1.7K	(1.8)SK	(1.7)S	(1.7)JS	(1.8)S	K(1.6)JS	(1.6)SF
13	K(1.6)JS	1.6FK	K(1.7)SF	K(1.7)JS	K(1.7)SF	1.7FK	(1.9)S	(2.0)JS	(2.0)S	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.8	1.8	1.8F	1.8F	(1.8)JF
14	1.8F	1.7F	1.7V	(1.7)S	1.7	(1.8)S	(2.0)S	(2.2)S	[2.1]C	1.9	1.8	1.6	1.7	1.7	1.8	1.8	1.8	1.9	(1.9)S	(1.9)S	1.9F	(1.9)SF	(1.7)SF	1.7F
15	1.6	(1.7)JS	(1.7)S	(1.6)S	(1.6)S	1.7	(1.8)SK	(1.8)SK	1.8K	1.8K	1.7K	1.6K	1.8K	(1.8)S	(1.8)SK	1.8K	1.8K	1.9K	1.8	(1.8)S	(1.8)S	1.7	1.7	(1.6)JS
16	1.6	1.6	1.6	(1.8)JS	1.7	1.8	1.9	(2.1)S	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	(1.8)S	(1.8)S	1.8	(1.8)JS	1.8
17	1.7	(1.7)S	1.7	1.8	1.7	1.8	(2.0)S	2.0	2.0	2.0	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.8	1.9	1.9	1.8	1.8	1.8	1.8
18	1.8	1.8	1.8	1.8	1.6	1.8	(2.0)JS	2.1	2.0	2.0	2.0H	1.8	1.8	1.8	1.7	1.8	1.8	1.9	2.0	(1.8)S	1.8	1.7	1.8	1.8
19	1.8	1.8	1.8	(1.9)JS	1.8	1.9	(2.0)S	2.1	2.0	(2.0)JS	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.9	(1.9)S	(1.9)S	1.8	1.8	(1.8)JS	(1.8)SF
20	(1.8)SF	(1.9)SF	1.8F	1.9F	1.9	1.9	2.0	(2.2)S	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.9	(1.9)S	1.9	(1.9)S	(1.9)S	(1.8)JS	(1.8)JS	(1.8)SF
21	1.8F	1.8F	1.8F	1.8F	1.9F	(1.9)S	1.9	2.1	2.0	1.9	1.9	1.9	1.8	1.9	1.8	1.7	1.8	1.8	(1.9)S	(1.9)S	(1.9)S	1.8F	(1.8)SF	1.8F
22	(1.7)SF	(1.8)S	1.7F	1.7F	1.7F	1.6	(1.8)FS	2.1S	1.9	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.8	1.8	(1.9)S	(2.0)S	1.8	1.8	1.7F	1.7
23	(1.7)SF	1.7F	1.7F	1.8F	1.7F	1.7F	(1.9)SF	2.1F	2.2	2.0	2.1	1.9	1.8	1.8	1.7	1.8	1.8	1.9	(1.9)S	(1.9)JS	(1.8)SF	(1.8)JS	1.8F	1.7F
24	1.7F	1.7F	1.7F	1.7F	1.8F	(1.8)JF	(2.0)SF	(2.1)S	2.0	2.0	2.0	1.8	1.9	1.7	1.8	1.8	1.8	1.8	(1.9)S	1.8	1.6	1.6K	1.6K	1.5K
25	(1.7)SK	1.9K	1.7K	1.6K	(1.7)SK	1.7K	1.7K	(1.9)SK	1.8K	1.7K	(1.6)SK	1.6K	1.6K	1.6K	1.6K	1.6K	1.7K	1.8K	1.8K	1.6K	1.6K	1.6K	1.6K	1.5FK
26	1.6K	K(1.6)JS	1.6K	1.8K	(1.8)SK	K(1.5)JS	(1.5)SK	2.0	1.9	1.9	1.8	1.9	1.9	1.8	1.9	1.9	1.9	1.9	1.8	(1.8)S	(1.8)S	1.6	1.7	(1.7)JS
27	1.8	1.7	(1.6)JS	(1.6)F	(1.5)F	(1.6)JF	1.8	(1.9)S	2.0	(2.0)S	(1.9)S	(1.9)S	M	M	1.9	2.0	1.9	1.8	(1.9)JS	(1.9)JS	(1.7)JS	1.7	1.6	(1.7)SF
28	(1.6)SF	1.7F	1.7F	1.6F	1.6F	1.7F	(1.8)JS	(1.9)S	(2.1)S	2.1	2.0	2.0	1.8	1.9	1.9	1.8	1.8	1.8	2.0	1.9	1.7	1.8	1.7F	1.9F
29	1.8F	1.7F	1.7F	1.8F	1.7F	1.7F	(1.9)JS	(2.1)S	2.2	2.0	2.0	2.0	1.9	2.0	1.9	1.8	1.9	1.9	(2.0)S	(1.9)SF	(1.9)SF	(1.8)SF	(1.8)SF	(1.8)SF
30	1.7F	1.7F	1.6F	1.7F	1.6F	(1.7)S	(1.8)SF	(2.2)S	.22	1.9	1.8	1.9	1.8	1.8	1.9	1.9	1.8	1.9	1.9	(1.9)S	1.8	(1.8)SF	(1.7)SF	(1.8)S
31																								
Median	1.7	1.7	1.7	1.8	1.7	1.7	1.9	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	(1.9)	1.8	1.8	1.7	1.7
Count	30	30	30	30	30	30	30	30	30	30	30	30	29	28	29	30	30	30	30	30	30	30	30	30

* SUPPLEMENTARY DATA FROM STERLING, VA.
LAT. 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 61

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

(M3000)F2, ______ (Characteristic) (Unit) September, 1949 (Month)

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: B.E.B., J.D., H.W.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: B.E.B., J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.6	2.8	2.9	2.6	2.5	2.6	2.7F	2.7	3.1	2.9	(2.8)J	2.8	2.8	2.7	2.7	2.8	2.8	2.8	3.0	3.0	2.9	2.6	(2.6)J	2.4
2	(2.4)J	(2.4)J	(2.4)JS	2.6	2.6	(2.7)JS	3.3	3.2	3.1	3.0	2.8	2.9	2.8	2.7	2.8	2.8	2.8	2.8	2.9	2.8	2.7	2.7	J(2.6)SK	2.6K
3	2.5K	K2.5FY	J(2.4)FK	J(2.4)FK	J(2.4)FK	J(2.5)FK	2.7FK	2.7K	2.8K	2.6K	(2.8)SK	2.9K	3.0K	2.8K	2.9K	2.9K	2.8K	2.8K	2.8K	2.8	2.8F	(2.7)JF	(2.6)JF	(2.5)JF
4	2.7F	(2.6)JF	(2.5)JF	(2.4)JF	(2.4)JF	(2.4)JF	2.8F	3.0F	*3.3	3.0	2.9	2.9	*2.9	2.9	2.8	2.9	2.9	2.8	2.8	3.0F	2.7F	(2.6)JF	(2.5)JF	(2.5)JF
5	(2.6)JF	2.7	2.8	2.7	2.7	2.8	3.1	(3.1)F	3.1	3.2	3.0	2.9	2.9	2.9	2.8	*2.8	*2.9	*(2.9)JS	*3.0	*3.0	*2.8	*2.8	*2.7	*2.6
6	*2.6	*2.7	*2.6	*(2.8)JS	*2.6	*2.7	*(3.2)JS	*3.2	*3.2	*(3.2)JS	*(3.0)JS	*(3.3)JS	*2.9	*(2.9)JS	*2.8	*2.8	*2.9	*(3.0)S	*3.0	*(2.9)S	*2.8	*(2.9)JS	2.8	(2.6)JF
7	(2.7)JF	(2.5)JF	(2.5)JF	(2.7)JF	(2.6)JF	*(2.7)JF	*3.0F	*3.1	3.3	3.1	3.0	2.9	2.8	2.7	2.8	2.8	2.9	2.8	2.7	(3.0)JS	2.9	2.7F	2.6	2.6F
8	(2.6)JF	(2.5)JF	2.5F	2.5F	2.5F	(2.6)JS	(3.0)JF	3.2	3.2	*3.2	*(3.1)JS	3.0	3.0	2.8	2.8	2.9	2.9	2.9	2.9	3.0	2.8	*2.8	*2.7	*2.6F
9	*2.6	2.8	2.8	2.8	2.8	2.8	3.0	3.2	3.0	3.2	3.1F	3.0	2.9	2.9	2.9	2.8	2.9	2.9	3.0	3.0	2.8	2.8	2.8	2.7
10	2.8F	2.8	2.8F	2.8F	2.8	2.9F	3.2	3.2	3.2	3.3	3.0	2.9	2.8	2.8	2.8	2.7	2.8	2.8	2.9	(2.9)S	2.7	2.7	2.6	2.6F
11	2.6F	2.6F	2.6F	2.6F	2.6F	2.7F	3.0	2.9	3.0	2.8	2.9	3.0	2.9	2.9	2.8	2.9	2.8	2.8	2.9	3.0	2.8	2.7	2.5	2.6
12	2.6	2.6	2.6	2.7	(2.5)J	(2.5)J	3.0F	3.3F	3.1K	2.5FK	2.4K	2.6K	2.7K	CK	CK	2.7K	(2.7)SK	2.7K	(2.7)SK	(2.7)SK	J(2.6)SK	(2.7)SK	J(2.5)SK	F(2.4)SK
13	J(2.5)SK	2.4FK	S(2.6)FK	J(2.7)SK	S(2.6)FK	2.6FK	(3.0)S	(2.9)JS	(3.0)S	2.9	2.9	2.8	2.8	2.7	2.7	2.7	2.7	2.8	2.9	2.8	2.7	2.7F	2.7F	(2.7)JF
14	2.7F	2.6F	2.6V	(2.6)S	2.6	(2.7)S	(2.9)S	(3.3)S	[3.1]C	2.9	2.8	2.5	2.6	2.6	2.6	2.7	2.8	2.7	(2.8)S	(2.8)S	2.8F	(2.7)SF	(2.5)SF	2.6F
15	2.5	(2.6)JS	(2.7)S	(2.5)S	(2.4)S	2.6	(2.7)SK	(2.8)SK	2.8K	2.7K	2.5K	2.5K	2.7K	(2.7)SK	(2.6)SK	2.6K	2.7K	2.8K	2.7	(2.8)S	(2.8)S	2.5	2.6	(2.5)JS
16	2.5	2.5	2.5	(2.6)JS	2.6	2.7	2.9	(3.1)S	2.9	2.9	2.8	2.8	2.6	2.7	2.7	2.8	2.8	2.8	2.8	(2.8)S	(2.7)S	2.7	(2.8)JS	2.7
17	2.6	(2.7)S	2.6	2.7	2.6	2.7	(2.9)S	3.1	3.0	3.0	2.9	2.8	2.8	2.8	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.6	2.7	2.7
18	2.7	2.8	2.8	2.8	2.5	2.7	(3.0)JS	3.2	2.9	3.1	3.0H	2.7	2.8	2.7	2.6	2.7	2.7	3.0	3.1	(2.8)S	2.7	2.7	2.7	2.7
19	2.7	2.7	2.8	(2.8)JS	2.7	2.8	(2.9)S	3.1	3.1	(3.0)JS	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.9	(2.8)S	(3.0)S	2.7	2.7	(2.7)JS	(2.7)SF
20	(2.7)SF	(2.8)SF	2.8F	2.9F	2.8	2.9	3.0	(3.2)S	3.1	3.0	2.8	2.8	2.7	2.7	2.7	2.7	2.8	(2.8)S	2.8	(2.9)S	(2.8)S	(2.8)JS	(2.8)JS	(2.7)SF
21	2.7F	2.7F	2.8F	2.7F	2.8F	(2.8)S	2.9	3.2	3.0	2.9	2.9	2.8	2.7	2.8	2.7	2.7	2.7	2.7	(2.8)S	(2.8)S	(2.8)S	2.8F	(2.7)SF	2.7F
22	(2.6)FS	(2.7)S	2.7F	2.6F	2.5F	2.5	(2.8)SF	(3.1)S	2.9	2.9	2.9	2.8	2.7	2.6	2.7	2.7	2.8	2.8	(2.9)S	(2.9)S	2.7	2.7	2.6F	2.6
23	(2.6)SF	2.7F	2.6F	2.7F	2.6F	2.6F	(2.8)SF	3.0F	3.1	3.1	3.0	2.9	2.8	2.7	2.7	2.7	2.7	2.8	(2.9)S	(2.8)JS	(2.7)SF	(2.7)JS	2.7F	2.6F
24	2.6F	2.6F	2.6F	2.6F	2.7F	(2.8)JF	(3.0)SF	(3.2)S	3.0	3.0	2.9	2.8	2.8	2.7	2.7	2.7	2.7	2.7	(2.8)S	2.7	2.5	2.5K	2.5K	2.5K
25	(2.7)SK	2.8K	2.6K	2.4K	(2.6)SK	2.5K	2.6K	(2.9)SK	2.8K	2.5K	(2.4)SK	2.5K	2.5K	2.5K	2.4K	2.5K	2.6K	2.7K	2.7K	2.3K	2.5K	2.5K	2.5K	2.4FK
26	2.4K	J(2.5)SK	2.5K	2.6K	(2.8)SK	J(2.5)SK	(2.6)SK	3.0	3.0	2.9	2.8	2.8	2.8	2.7	2.8	2.8	2.8	2.9	2.8	(2.8)S	(2.7)S	2.6	2.6	(2.6)JS
27	2.7	2.8	(2.5)JS	(2.5)F	(2.3)F	(2.4)JF	2.7	(2.9)S	3.0	(3.0)S	(2.9)S	(2.9)S	M	M	2.8	2.9	2.8	2.8	(2.9)JS	(2.8)JS	(2.6)JS	2.5	2.5	(2.6)SF
28	(2.5)FS	2.5F	2.6F	2.5F	2.5F	2.6F	(2.8)JS	(2.8)S	(3.0)S	3.1	3.0	3.0	2.8	2.9	2.9	2.8	2.8	2.8	3.0	2.9	2.6	2.7	2.6F	2.8F
29	2.7F	2.7F	2.7F	2.7F	2.7F	2.6F	(2.9)JS	(3.2)S	3.2	3.1	3.0	3.0	2.9	2.8	2.8	2.8	2.8	2.9	(3.0)S	(2.8)SF	(2.8)SF	(2.7)SF	(2.8)SF	(2.7)SF
30	2.6F	2.6F	2.4F	2.6F	2.4F	(2.6)S	(2.8)SF	(3.3)S	3.2	2.9	2.8	2.9	2.8	2.7	2.8	2.8	2.8	2.9	2.8	(2.8)S	2.7	(2.7)SF	(2.6)SF	(2.7)S
31																								
Median	2.6	2.6	2.6	2.6	2.6	2.6	2.9	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.8	2.8	2.8	2.8	2.8	(2.8)	2.7	2.7	2.6	2.6
Count	30	30	30	30	30	30	30	30	30	30	30	30	29	28	29	30	30	30	30	30	30	30	30	30

* SUPPLEMENTARY DATA FROM STERLING, VA.
LAT 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 62

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F1 (Characteristic), ____ (Unit), September (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B. E. B., J.D.

Calculated by: B. E. B., J. D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	L	L	3.7	L	(3.7)P	(3.3)P	(3.3)P	(3.3)P	L	L	Q	Q					
2							Q	Q	Q	(3.9)P	(3.8)P	L	L	(3.5)P	(3.3)P	L	Q	Q	Q					
3							QK	LK	(3.5)PK	3.4K	LK	(3.6)PK	3.5K	LK	LK	LK	QK	QK	QK					
4							Q	Q	*L	L	L	L	*L	(3.7)P	(3.5)P	(3.6)P	L	Q	Q					
5							Q	Q	Q	L	L	L	L	L	*L	*L	*L	*L	*Q					
6							*Q	*Q	*L	*L	*L	*L	*L	*L	*L	*L	*L	*Q	*Q					
7							*Q	*Q	L	L	(3.6)P	L	L	L	L	L	L	L	Q					
8							Q	Q	Q	*L	*L	L	L	L	L	L	Q	Q	Q					
9							Q	Q	Q	Q	L	(3.8)P	L	L	L	Q	Q	Q	Q					
10							Q	Q	Q	L	L	L	L	L	L	L	L	Q	Q					
11							Q	Q	Q	(3.5)P	L	(3.6)P	(3.7)P	L	Q	Q	Q	Q	Q					
12							Q	Q	QK	3.6K	LK	(3.5)PK	3.2K	CK	CK	(3.2)PK	LK	LK	QK					
13							Q	Q	Q	L	L	(3.7)P	(3.3)P	L	(3.3)P	Q	L	Q	Q					
14							Q	Q	L	(3.7)P	L	(3.3)P	(3.1)P	(3.3)P	L	L	Q	Q	Q					
15							QK	QK	(3.1)PK	(3.3)PK	3.2K	(3.1)SK	3.3K	(3.7)PK	(3.8)PK	QK	QK	QK	Q					
16							Q	Q	L	Q	(3.6)P	(3.3)P	L	L	L	Q	L	Q	Q					
17							Q	Q	Q	L	Q	L	L	(3.3)P	L	(3.6)P	L	Q	Q					
18							Q	Q	Q	L	3.8	3.9	L	L	(3.2)P	L	Q	Q	Q					
19							Q	Q	Q	L	L	L	L	L	L	L	Q	L	Q					
20							Q	Q	Q	L	L	L	L	L	L	L	L	Q	Q					
21							Q	Q	Q	Q	L	L	L	L	L	Q	Q	Q	Q					
22							Q	Q	Q	Q	Q	(4.0)P	L	L	L	Q	Q	Q	Q					
23							Q	Q	L	Q	L	L	L	L	Q	Q	Q	Q	Q					
24							Q	Q	Q	Q	Q	(3.8)P	(3.6)P	Q	L	Q	Q	Q	Q					
25							QK	QK	3.2K	3.0K	3.4K	3.5K	3.2K	3.1K	3.1K	3.1K	LK	QK	QK					
26							QK	L	Q	L	Q	L	L	Q	Q	Q	L	Q	Q					
27							Q	Q	Q	Q	Q	L	M	M	Q	Q	Q	Q	Q					
28							Q	Q	Q	Q	L	L	L	L	Q	Q	Q	Q	Q					
29							Q	Q	Q	Q	L	L	Q	L	L	L	Q	Q	Q					
30							Q	Q	Q	Q	L	L	L	Q	Q	Q	Q	Q	Q					
31																								
Median								—	—	(3.6)	(3.6)	(3.6)	(3.3)	(3.3)	(3.3)	—	—	—						
Count									3	8	6	13	9	7	7	4								

* SUPPLEMENTARY DATA FROM STERLING, VA.
LAT 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 63

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

Form adopted June 1946

(M1500)E (Characteristic), ______ (Unit), September (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by B.E.B., J.D.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by B.E.B., J.D.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							4.0	4.1	B	4.2	4.0	4.0	4.0	(3.9)B	(3.9)B	4.1	4.2	4.1	4.0					
2							B	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.1	4.1	4.4	4.4	4.1					
3							4.1K	4.4K	4.3K	4.4K	4.2K	4.1K	4.2K	4.1K	A K	4.3K	4.3K	4.0K	3.6K					
4								4.1	*3.5	4.2	4.2	4.3	*4.2	4.3	(4.4)B	4.1	4.2	3.9	4.2					
5								4.2	4.3	4.4	4.2	4.0	4.3	(4.4)B	4.4	*4.1	*4.2	*4.1	*4.0					
6							*A	*4.4	*4.4	*4.3	*4.2	*4.1	*3.9	*4.2	*4.3	*4.2	*4.2	*3.9	*4.6					
7							*(3.7)A	*(4.0)A	4.0	A	4.2	B	B	(4.0)B	B	4.1	4.2	4.2	4.4					
8							4.1	4.0	4.2	*4.2	*4.5	B	B	B	B	B	4.0	4.2	4.5					
9							4.1	4.2	4.5	4.5	4.0	4.3	4.1	B	4.1	4.1	4.1	4.3	B					
10								B	(4.3)B	B	A	(4.2)A	A	(3.7)H	(3.9)P	3.8	3.7	(3.8)P	(4.1)H					
11							4.2	4.1	4.2	4.3	4.4	4.3	4.2	B	B	4.1	4.2	4.0	4.0					
12							4.3	4.2	4.0K	4.0K	4.1K	B K	4.3K	C K	C K	3.6K	3.4K	3.6K	3.8K					
13							3.7	3.5	3.6	3.7	(3.6)B	B	(3.7)B	B	3.7	3.7	3.6	3.9	A					
14							3.3	B	[3.7]C	3.8	(3.9)B	3.8	3.7	3.8	3.9	(3.9)B	3.8	3.9	4.0					
15							3.4K	3.7K	3.8K	4.0K	3.8K	B K	3.8K	(3.7)PK	3.7K	3.8K	3.6K	3.8K	(3.7)P					
16							(3.7)B	3.7	4.4	3.9	4.0	3.9	3.9	(3.8)B	B	3.7	3.8	3.8	3.6					
17							B	3.8	4.0	4.0	4.1	4.1	4.1	B	4.0	3.9	3.9	3.8	(3.7)S					
18							B	3.7	3.9	3.9	(3.9)P	3.6	(4.0)B	3.7	3.9	4.1	(4.1)S	S	B					
19							A	3.5	4.0	3.9	3.8	4.0	3.9	3.7	(3.7)B	3.9	3.8	(3.8)A	A					
20							B	3.8	A	3.8	4.0	(3.9)B	(4.0)B	(3.8)B	3.9	4.1	(3.8)S	4.4	3.2					
21							S	(3.9)S	(3.9)S	4.0	4.0	3.9	3.9	3.8	4.1	4.0	3.8	(4.0)S	B					
22							S	3.7	3.8	4.0	(4.1)B	4.1	(4.1)B	(3.9)B	3.9	3.8	4.0	(3.8)S	S					
23							A	(4.0)S	3.8	(4.1)S	4.0	3.9	4.2	(4.1)B	3.9	3.9	3.9	(3.8)S	S					
24							A	(3.6)S	3.9	3.8	3.9	(3.9)B	4.0	4.0	3.7	[3.8]B	3.8	(4.1)S	A					
25							(3.2)SK	4.0K	3.8K	4.0K	3.8K	(3.9)BK	3.9K	3.9K	3.8K	3.9K	3.9K	3.7K						
26							3.7K	3.5	(4.2)A	3.8	(3.8)S	(3.8)B	3.8	3.8	3.8	3.7	3.7	3.6	S					
27							3.8	(3.7)S	3.8	(3.9)S	3.7	(3.8)B	M	M	(3.8)B	3.7	3.9	2.7						
28							(3.3)S	3.9	4.0	3.6	3.7	(3.8)B	(3.8)B	3.9	3.8	3.9	3.8	(3.6)S	A					
29							S	3.4	3.9	(3.8)S	3.7	(3.8)B	3.9	3.8	3.9	4.0	3.9	4.0	A					
30								4.1	A	4.1	4.0	A	4.1	3.8	B	B	(4.0)B	3.9						
31																								
Median							3.7	4.0	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.9	4.0					
Count							15	28	27	28	29	24	26	23	23	28	30	29	16					

* SUPPLEMENTARY DATA FROM STERLING, VA
LAT 39.0°N, LONG. 77.5°W

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Table 64

Ionospheric Storminess at Washington, D. C.

September 1949

Day	Ionospheric character* 00-12 GCT	Ionospheric character* 12-24 GCT	Principal storms Beginning GCT	Principal storms End GCT	Geomagnetic character** 00-12 GCT	Geomagnetic character** 12-24 GCT
1	2	3			2	3
2	3	1	2200	----	3	3
3	4	4	----	1900	5	3
4	2	2			3	2
5	1	0			2	2
6	1	1			3	1
7	1	1			2	1
8	2	0			2	3
9	1	2			2	0
10	1	2			0	2
11	1	2			3	2
12	2	6	0800	----	3	3
13	4	2	----	0600	3	2
14	3	3			2	3
15	3	4	0600	1800	2	2
16	3	3			2	2
17	2	2			1	3
18	1	2			1	0
19	1	1			0	0
20	1	2			0	0
21	1	2			0	1
22	2	1			2	1
23	1	1			1	1
24	1	2	2100	----	2	3
25	4	6	----	----	4	3
26	4	1	----	0700	3	2
27	2	1			4	3
28	2	2			3	1
29	1	2			2	1
30	2	1			3	2

*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

**Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

----Dashes indicate continuing storm.

Table 65

Sudden Ionosphere Disturbances Observed at Washington, D. C.

September 1949

1949 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
September					
15	1513	*****	Ohio, D. C., England	0.0	
15	1623	1640	Ohio, D. C., England	0.1	Terr.mag.pulse** 1622-1635
15	1905	1945	Ohio, D. C., England	0.1	
15	2122	2200	Ohio, D. C., Canal Zone, England, New Brunswick	0.01	
16	1429	1510	Ohio, D. C., Canal Zone, England	0.05	Solar flare*** 1425
16	1828	1940	Ohio, D. C., England, New Brunswick	0.0	
17	1416	1500	Ohio, D. C., England	0.1	
17	1717	2040	Ohio, D. C., Canal Zone, England, New Brunswick	0.0	Terr.mag.pulse** 1718-1735 Solar flare*** 1717
18	1750	1855	Ohio, D. C., England	0.2	
19	1126	1140	England	0.2	
19	1654	1725	Ohio, D. C., England	0.05	
24	1944	*****	Ohio, D. C., England	0.05	
24	2000	2045	Ohio, D. C., Canal Zone, England	0.0	
27	1535	1600	Ohio, D. C., England	0.2	
30	1717	1745	Ohio, D. C., England	0.1	
30	1858	2020	Ohio, D. C., Canal Zone	0.0	

1949 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
September					
1	1712	1800	Ohio, D. C.	0.1	
2	1822	1840	Ohio, D. C., England, New Brunswick	0.0	Terr.mag. pulse** 1822-1830
5	1235	1320	Ohio, D. C.	0.05	Terr.mag.pulse** 1231-1233
8	1300	1330	Ohio, D. C., England	0.2	Solar flare*** 1325
8	1408	1440	Ohio, D. C., England	0.1	
9	1345	1420	Ohio, D. C.	0.3	Solar flare*** 1340
11	1839	1920	Ohio, D. C., Canal Zone, New Brunswick	0.0	Terr.mag.pulse** 1848-1905
12	1315	1355	Ohio, D. C., England	0.03	Terr.mag.pulse** 1314-1320 Solar flare**** 1330
12	1522	1600	Ohio, D. C., England	0.0	
12	2010	2050	Ohio, D. C., England, New Brunswick		Terr.mag.pulse** 2009-2020
13	1046	1110	England	0.1	
13	1305	1350	Ohio, D. C., Canal Zone, England	0.0	Terr.mag.pulse** 1305-1330
13	1605	1640	Ohio, D. C., Canal Zone, England	0.0	
13	1745	1915	Ohio, D. C., Canal Zone, England	0.0	
14	1329	1540	Ohio, D. C., England	0.1	Solar flare*** 1315
15	1227	1245	England	0.1	

*Ratio of received field intensity during SID to average field intensity before and after, for station W8XAL, 6080 kilocycles, 600 kilometers distant, for all SID except the following: Station GLH, 13525 kilocycles, received in New York, 5340 kilometers distant, was used for the SID on September 13 at 1046, on September 15 at 1227, and on September 19 at 1126.

**As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

***Time of observation at McMath-Hulbert Observatory, Michigan.

****Time of observation at Meudon Observatory, France.

*****Incomplete recovery of SID.

Table 66

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,

Cable and Wireless, Ltd., as Observed in England

1949 Day	GCT Beginning	End	Receiving station	Location of transmitters	Other phenomena
August					
31	0719	0750	Brentwood	Afghanistan, Bahrein I., Belgian Congo, French Equatorial Africa, Greece, Indian, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Syria, Trans-Jordan	Solar flare** 0747
31	0722	0745	Somerton	Aden, China, India	Solar flare** 0747
September					
1	0800	0815	Brentwood	Afghanistan, Bahrein I., Belgian Congo, Greece, India, Iran, Palestine, Portugal, Southern Rhodesia, Spain, Syria, Trans-Jordan, Turkey, Zanzibar	
1	0917	0930	Brentwood	Belgian Congo, Canary Is., Eritrea, Greece, Indian, Iran, Kenya, Malta, Palestine, Southern Rhodesia, Spain, Switzerland, Syria, U.S.S.R., Zanzibar	
2	1030	1100	Brentwood	Bahrein I., Bulgaria, Greece, India, Iran, Kenya, Malta, Palestine, Portugal, Spain, Switzerland, Syria, Turkey, U.S.S.R., Yugoslavia, Zanzibar	
5	0949	1020	Brentwood	Austria, Bahrein I., Belgian Congo, Canary Is., Greece, India, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Turkey, U.S.S.R., Yugoslavia, Zanzibar	
5	0950	1020	Somerton	Aden, Argentina, Australia, Brazil, Ceylon, China, Gold Coast, India, Nigeria, Union of S. Africa	
5	1234	1300	Brentwood	Bahrein I., Barbados, Belgian Congo, Bulgaria, Canary Is., Colombia, Greece, India, Iran, Kenya, Madagascar, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Turkey, U.S.S.R., Yugoslavia, Zanzibar	Terr.mag. pulse* 1231-1233
5	1230	1255	Somerton	Aden, Argentina, Brazil, Canada, Ceylon, Egypt, Gold Coast, India, Nigeria, New York, Union of S. Africa	Terr.mag. pulse* 1231-1233
15	1225	1300	Brentwood	Greece, Portugal, Southern Rhodesia, Spain, Syria	
15	1415	1500	Brentwood	Bulgaria, Colombia, Palestine, Turkey, Yugoslavia	
15	1515	1600	Brentwood	Barbados	
15	1520	1545	Somerton	Argentina, Brazil, Canada, Gold Coast, New York	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at Meudon Observatory, France.

Table 67

Sudden Ionosphere Disturbances Reported by International Telephone and Telegraph Corporation, as Observed at Platanos, Argentina

1949 Day	GCT Beginning	GCT End	Location of transmitters
August 3	1120	1400	Belgium, Germany, Netherlands, New York, Venezuela

Table 68

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc., as Observed at Point Reyes, California

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
September 11	1850	1910	Australia, Hawaii, Japan, Philippine Is.	Terr.mag. pulse* 1848-1905
12	0630	0700	China, Japan, Philippine Is.	Solar flare** 0620
13	0353	0430	Australia, China, Japan, Java, Philippine Is.	
15	2126	2150	Australia, China, Hawaii, Japan, Java, New York, Philippine Is.	
17	1720	1900	Australia, China, Hawaii, Japan	Terr.mag. pulse* 1718-1735 Solar flare*** 1717
18	0215	0230	Australia, China, Chosen, Hawaii, Japan, Java, Philippine Is.	
October 2	0322	0400	Australia, China, Japan, Philippine Is.	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at Prague Observatory, Czechoslovakia.

***Time of observation at McMath-Hulbert Observatory, Michigan.

Table 69

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc.,

as Observed at Riverhead, New York

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
September				
5	1235	1310	Argentina, England, Italy, Morocco	Terr.mag. pulse* 1231-1233
12	1320	1345	Argentina, Panama	Terr.mag. pulse* 1314-1320 Solar flare** 1330
13	1305	1335	Argentina, England, Italy, Morocco, Panama	Terr.mag. pulse* 1305-1330
15	1525	1600	Argentina, Canada, England, Italy, Morocco, Panama, Sweden	
17	1720	1800	Argentina, Canada, England, Italy, Morocco, Panama, Puerto Rico, Union of S. Africa	Terr.mag. pulse* 1718-1735 Solar flare*** 1717
18	0950	1010	Italy, Morocco	
October				
1	1712	1725	Argentina, Canada, England, Italy, Morocco, Panama	Terr.mag. pulse* 1709-1725
2	1402	1420	Argentina, Canada, England, Italy, Morocco, Panama	Terr.mag. pulse* 1404-1425

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at Meudon Observatory, France.

***Time of observation at McMath-Hulbert Observatory, Michigan.

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Table 70

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
August 1949

Day	North Atlantic: Quality figure 01-12 GCT	Quality figure 13-24 GCT	CRPL* Warning 01-12 GCT	CRPL* Warning 13-24 GCT	CRPL** Forecast of probable disturbed periods	Geomagnetic K_{Ch} 01-12 GCT	Geomagnetic K_{Ch} 13-24 GCT	North Pacific: Quality figure 01-12 GCT	Quality figure 13-24 GCT	CRPL* Warning 01-12 GCT	CRPL* Warning 13-24 GCT	CRPL** Forecast of probable disturbed periods	Geomagnetic K_{Ch} 01-12 GCT	Geomagnetic K_{Ch} 13-24 GCT
1	7	6			X	1	2	7	7			X	1	2
2	5	5		X	X	3	3	6	7		X	X	3	3
3	(2)	5	X	X		6	3	(4)	5	X	X		6	3
4	(3)	(4)	X	X		5	4	5	5	X	X		5	4
5	(2)	(3)	X	X		3	4	5	(4)	X	X		3	4
6	(4)	(4)	X			2	2	5	6	X			2	2
7	(4)	(4)				1	3	5	6				1	3
8	(2)	5	X	X		4	2	(4)	6	X	X		4	2
9	(4)	5				2	2	5	6				2	2
10	(3)	(4)				2	2	6	7				2	2
11	5	5				1	1	6	7				1	1
12	6	6				2	1	6	6				2	1
13	6	6				2	2	6	6				2	2
14	6	6				4	3	5	6				4	3
15	5	5				4	2	6	6				4	2
16	6	5				2	1	6	7				2	1
17	6	6				2	3	6	7				2	3
18	5	5				2	3	6	7				2	3
19	6	6	X			2	2	6	6	X			2	2
20	6	6			X	3	3	5	7			X	3	3
21	6	6			X	2	2	6	7			X	2	2
22	7	6				2	2	6	7				2	2
23	7	6				2	1	6	7				2	1
24	7	6				1	0	6	7				1	0
25	7	6				0	1	6	7				0	1
26	6	6				1	1	6	6				1	1
27	5	6				3	2	5	6				3	2
28	6	6			X	2	1	6	7			X	2	1
29	7	6			X	2	2	5	7			X	2	2
30	6	6				2	1	5	7				2	1
31	6	6				1	2	6	6				1	2
Score:														
H			5		0					3		0		
M			3		8					0		3		
G			21		17					24		22		
(S)			1		1					2		2		
S			1		5					2		4		

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast.

**In addition to dates marked X, the following were designated as probable disturbed days on forecasts more than eight days in advance of said dates: August 30 and 31.

Quality Figure Scale:
1 - Useless
2 - Very poor
3 - Poor
4 - Poor to fair
5 - Fair
6 - Fair to good
7 - Good
8 - Very good
9 - Excellent

Symbols:
- X Warning given or probable disturbed date
- H Quality 4 or worse on day or half day of warning
- M Quality 4 or worse on day or half day of no warning
- G Quality 5 or better on day of no warning
- (S) Quality 5 on day of warning
- S Quality 6 or better on day of warning
- ( ) Quality 4 or worse (disturbed)

Geomagnetic K_{Ch} on the standard scale of 0 to 9, 9 representing the greatest disturbance.

Table 71

American and Zürich Provisional Relative Sunspot Numbers

September 1949

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	234	165	17	216	182
2	225	165	18	226	210
3	224	184	19	223	154
4	229	184	20	221	170
5	223	174	21	187	130
6	222	188	22	199	148
7	212	184	23	175	144
8	212	170	24	167	127
9	196	160	25	63	136
10	220	164	26	138	108
11	235	176	27	101	94
12	213	173	28	92	84
13	200	170	29	66	55
14	183	168	30	65	51
15	179	172			
16	166	159	Mean:	183.7	151.6

*Combination of reports from 49 observers; see page 8.
**Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

Table 72a

Coronal observations at Climax, Colorado (5303A), east limb

Date GCT	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Sept. 1.6	X	X	X	X	X	1	2	3	3	4	6	9	10	14	22	20	18	13	7	8	8	9	10	9	8	7	X	X	X	X	X	X	X	X	X	X	X
4.7	X	X	X	X	X	X	-	-	-	-	-	1	4	5	7	9	10	12	11	10	9	8	8	7	6	5	4	1	-	-	-	-	-	-	-	-	-
5.7	-	-	-	-	-	-	-	-	-	1	3	7	8	10	9	12	13	13	12	11	10	8	5	4	3	3	2	2	1	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	1	3	7	9	11	15	17	19	18	14	9	11	12	4	3	2	2	3	3	3	2	1	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	1	3	3	4	7	14	20	24	22	14	10	11	12	7	2	2	3	3	2	1	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	1	3	4	9	15	18	20	16	9	8	8	7	6	5	5	4	3	1	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	1	2	3	3	3	5	10	18	17	19	15	13	12	13	16	14	3	2	3	3	1	-	-	-	-	-	-	-	-	-
10.8	-	-	-	-	-	1	3	3	4	4	8	7	10	15	22	23	18	14	12	18	15	17	15	10	4	3	3	3	2	1	-	-	-	-	-	-	-
11.7	X	X	X	X	-	-	-	1	2	3	3	3	9	13	18	30	20	14	13	12	12	13	13	12	10	9	X	X	X	X	X	X	X	X	X	X	X
12.9	-	-	-	-	-	-	-	-	-	-	1	3	6	15	20	23	20	13	12	10	9	9	10	10	7	3	1	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	1	2	2	2	2	2	2	3	10	17	28	30	35	30	30	17	15	33	34	25	13	11	12	12	9	8	6	5	2	1	-	-	-	-
15.7	-	-	-	-	-	-	-	-	-	1	2	1	9	11	12	14	16	17	13	13	13	30	25	12	9	8	7	5	4	3	3	2	1	-	-	-	-
16.7	-	-	-	-	-	-	-	-	-	-	-	1	6	16	16	15	15	15	14	16	16	32	30	18	14	12	6	3	1	-	-	-	-	-	-	-	-
17.7	-	-	-	-	-	-	-	-	-	-	-	1	5	10	14	13	13	12	11	12	14	14	13	12	12	10	9	8	1	-	-	-	-	-	-	-	-
18.7	X	X	X	X	X	X	X	X	X	X	X	X	X	18	20	24	23	17	12	15	25	24	24	20	11	8	1	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	1	3	10	18	22	24	19	19	21	25	24	20	19	15	5	2	1	-	-	-	-	-	-	-	-	-
20.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21.6	X	X	X	X	X	-	-	-	-	-	-	-	-	1	5	7	9	10	8	8	8	8	7	7	6	5	1	-	-	-	-	-	-	-	-	-	-
22.8	-	-	-	-	-	-	-	1	2	2	3	3	5	4	5	12	17	17	16	13	10	10	11	12	8	7	8	8	3	1	-	-	-	-	-	-	-
23.8	-	-	-	-	-	-	-	-	1	2	2	2	3	4	5	10	13	12	12	13	10	5	5	7	8	8	6	7	1	-	-	-	-	-	-	-	-
24.8	X	X	-	-	-	-	-	-	-	-	-	-	-	1	5	8	8	9	11	13	12	12	3	3	1	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	1	2	4	9	14	15	15	13	12	13	15	14	5	1	-	-	-	-	-	-	-	-	-	-	-	-
26.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27.7	-	-	-	-	-	-	1	2	3	5	8	10	12	14	18	22	25	28	23	18	16	19	22	14	12	4	3	4	5	5	4	3	2	1	-	-	-
28.7	-	-	-	-	-	1	2	3	3	4	6	8	11	15	18	21	19	19	19	15	17	27	20	15	12	8	4	2	1	3	3	1	-	-	-	-	-
29.8	X	X	X	X	X	-	-	1	2	5	8	12	17	19	20	21	17	18	18	18	20	26	15	10	8	3	2	1	-	-	-	-	-	-	X	X	X
30.7	X	-	-	1	3	3	3	2	1	2	7	10	15	18	19	20	20	12	19	18	24	27	20	17	12	8	3	3	3	2	3	5	5	X	X	X	X

Table 73a

Coronal observations at Climax, Colorado (6374A), east limb

Date GCT	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Sept. 1.6	X	X	X	X	X	X	-	-	-	-	-	-	10	2	4	17	8	1	1	1	1	1	2	2	1	X	X	X	X	X	X	X	X	X	X	X	X
4.7	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	2	11	8	1	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	9	5	4	5	5	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	5	9	1	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	9	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	1	5	6	6	7	1	-	1	3	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	1	1	1	1	1	-	-	-	-	-	-	-	1	10	10	13	9	1	-	3	13	12	-	-	-	-	-	-	-	1	3	3	1	-	-	-	-
11.7	X	X	1	1	1	1	1	1	1	1	-	-	2	5	12	13	13	5	-	-	3	8	2	-	-	-	X	X	X	X	X	X	X	X	X	X	X
12.9	-	-	-	-	-	-	-	-	-	-	-	-	1	12	12	10	13	1	-	4	3	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	1	1	1	1	1	-	1	1	1	1	2	1	3	8	15	14	10	9	1	8	10	15	14	12	10	-	-	1	3	3	2	1	1	1	1	1	1
15.7	2	1	2	3	3	3	2	2	1	1	-	1	9	5	12	10	14	1	1	1	5	18	15	15	2	1	1	1	1	1	1	1	1	1	1	-	-
16.7	2	2	3	3	3	3	2	2	2	2	-	1	5	5	6	8	11	-	-	12	-	15	13	16	2	1	1	1	1	1	1	1	1	1	1	1	1
17.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	12	11	12	1	-	-	-	-	-	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	13	5	2	11	12	10	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
19.6	1	1	1	1	2	2	2	2	2	2	-	-	-	-	3	16	8	8	9	12	17	10	11	12	1	1	-	-	-	-	-	-	-	-	-	-	-
20.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21.6	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.8	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	10	-	2	4	1	1	1	1	1	1	1	-	-	-	-	-
23.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5	4	7	1	-	-	-	2	4	1	-	-	-	-	-	-	-	-	-	-	-	-
26.7	X	X	X	X	X	X	X	X	X	X	X	X	1	2	5	13	14	3	2	2	1	3	9	2	1	1	-	-	-	-	-	-	-	-	X	X	X
27.7	1	1	1	1	1	1	1	1	1	1	-	1	1	2	1	1	14	12	12	13	13	2	13	10	1	1	-	-	1	3	3	4	1	1	1	1	1
28.7	1	1	1	1	1	1	1	1	1	1	-	1	4	3	1	12	1	7	1	10	15	19	17	15	1	-	-	-	8	8	5	X	10	4	2	1	1
29.8	X	X	X	X	X	-	-	-	-	-	-	1	1	1	-	8	12	13	14	2	5	15	15	12	1	1	1	1	3	4	3	2	1	1	X	X	X
30.7	X	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	3	10	5	-	1	1	19	19	5	1	1	1	1	1	1	1	1	1	1	1	X

Table 72b

Coronal observations at Climax, Colorado (5303A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Sept. 1.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.7	-	-	-	-	-	-	-	-	-	-	5	7	11	12	13	10	9	9	9	9	10	13	12	6	4	1	-	-	-	-	-	-	-	-	-	-	X
5.7	-	-	-	-	-	1	2	3	3	2	3	3	7	10	12	11	11	12	11	11	11	12	11	8	1	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	1	3	3	8	13	13	11	23	20	13	17	19	20	15	10	1	-	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	1	3	4	5	8	10	12	9	11	14	13	14	18	20	15	10	7	1	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	1	3	9	11	10	10	9	10	11	11	13	7	6	1	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	1	3	4	5	5	4	8	10	11	10	11	10	11	13	12	9	8	6	3	1	-	-	-	-	-	-	-	-	-	-
10.8	-	-	-	-	-	-	1	3	4	5	5	4	6	8	8	11	14	14	13	15	9	8	5	4	3	1	-	-	-	-	-	-	-	-	-	-	-
11.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12.9	-	-	-	-	-	-	1	3	4	3	3	1	2	1	14	16	17	15	15	16	15	17	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	1	2	3	3	4	5	5	6	7	9	12	15	13	12	12	13	15	25	38	40	28	12	8	6	5	4	3	2	2	1	1	-	-	-
15.7	-	-	-	-	-	1	2	3	3	4	5	6	14	16	20	25	25	14	12	10	15	20	30	31	25	9	5	5	4	2	-	-	-	-	-	-	-
16.7	-	-	-	-	-	1	2	2	2	3	4	4	3	5	15	23	19	19	15	12	18	20	32	32	24	12	11	2	3	3	2	1	-	-	-	-	-
17.7	-	-	-	-	-	-	-	-	-	-	1	3	4	6	9	10	11	11	8	12	14	13	10	11	9	5	1	-	-	-	-	-	-	-	-	-	-
18.7	-	X	X	X	X	X	X	X	X	X	X	1	5	6	9	10	11	11	8	11	14	13	10	9	8	1	-	-	-	-	-	-	-	-	-	-	X
19.6	-	X	X	X	-	-	1	2	3	5	9	11	12	12	10	7	8	9	9	10	10	9	9	6	5	4	3	2	1	-	-	-	-	-	-	-	-
20.7	X	-	-	-	-	-	-	-	1	3	4	5	10	10	10	8	7	7	9	13	15	15	14	11	8	3	2	1	-	-	-	-	-	-	-	-	X
21.6	-	X	X	X	X	-	-	-	1	1	6	6	7	9	9	8	8	6	5	14	15	15	14	7	1	-	-	-	-	-	-	-	-	-	-	-	X
22.8	-	-	-	-	1	2	2	2	3	3	5	13	15	19	20	22	25	23	14	13	20	33	32	28	8	5	3	2	2	2	2	2	1	-	-	-	-
23.8	-	-	-	-	-	-	-	-	-	1	2	3	5	9	14	13	13	13	10	11	17	18	15	13	8	4	2	1	-	-	-	-	-	-	-	-	-
24.8	-	X	X	-	-	-	-	-	-	-	-	5	9	11	13	14	14	13	13	13	14	17	18	16	12	10	5	1	-	-	-	-	-	-	-	-	X
25.7	-	-	-	-	-	-	-	1	2	2	2	3	7	10	14	17	20	14	15	17	20	28	15	14	5	2	1	-	-	-	-	-	-	-	-	-	-
26.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27.7	-	-	-	-	-	1	2	2	3	3	4	5	6	10	18	29	27	20	16	28	23	28	28	22	15	12	7	1	-	-	-	-	-	-	-	-	-
28.7	-	X	X	X	1	2	3	3	4	3	7	8	11	13	20	34	33	25	20	20	22	24	19	17	12	12	7	1	-	-	-	-	-	-	-	-	-
29.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
30.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 73b

Coronal observations at Climax, Colorado (6374A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Sept. 1.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.7	-	-	-	-	-	1	1	1	1	2	2	1	1	1	1	2	1	1	2	1	2	1	2	1	X	X	X	X	X	X	X	X	X	X	X	X	X
5.7	-	-	-	-	-	1	1	1	1	1	1	-	-	1	-	-	5	10	1	1	9	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	1	1	1	2	1	1	-	-	-	2	1	-	1	13	3	1	9	8	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	1	1	2	2	1	-	-	1	3	8	-	-	14	2	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	4	4	3	4	4	-	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	6	-	3	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	10	3	4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
11.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12.9	-	-	-	-	-	-	1	1	1	-	-	-	1	2	-	13	3	1	1	7	8	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	1	1	1	-	1	2	2	3	3	1	1	1	1	9	8	7	8	1	1	13	3	14	12	8	2	-	-	-	-	1	1	1	1	1	1	1	1
15.7	-	-	-	-	2	2	3	4	9	5	1	-	1	8	12	15	16	8	4	3	2	22	13	10	5	1	-	-	-	-	-	3	3	2	2	2	2
16.7	1	1	1	1	1	1	2	3	3	3	1	1	-	-	10	19	15	3	1	6	3	1	1	12	8	8	1	-	-	-	1	2	3	3	3	3	2
17.7	-	-	-	-	-	-	-	-	1	1	2	1	3	5	8	9	1	1	-	10	3	1	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	1	1	1	1	2	2	3	4	5	5	6	1	1	8	10	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	X	X	1	1	1	1	1	2	2	2	1	1	3	6	2	2	2	1	1	5	10	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1
20.7	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	9	4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	X
21.6	-	X	X	X	X	-	-	-	-	-	-	1	1	1	1	1	1	1	-	1	4	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	X
22.8	-	-	-	-	1	1	1	1	2	2	1	-	-	-	5	1	8	14	5	-	10	2	5	1	-	-	-	-	-	-	-	-	-	-	-	1	1
23.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4	1	1	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.8	-	-	-	-	1	1	2	2	2	3	3	2	1	1	4	6	7	3	1	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	1	1	1	2	2	2	2	-	1	1	1	2	4	4	4	1	1	1	2	2	2	1	-	-	-	-	-	-	-	-	-
26.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27.7	1	1	1	1	1	1	1	1	1	2	1	1	3	6	8	10	11	13	8	-	1	3	4	4	1	-	-	-	-	-	1	1	1	1	1	1	1
28.7	1	2	-	1	3	8	8	10	8	8	6	3	13	14	14	19	20	12	2	2	14	12	8	8	4	1	-	-	-	-	-	1	1	1	1	1	1
29.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
30.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 74a

Coronal observations at Climax, Colorado (6704A), east limb

Date GCT	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Sept. 1.6	X	X	X	X	X	X	X	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.7	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1	1	1	1	1	1	2	2	2	1	1	-	X	X	X	X	X	X	X	X	X	X	X
12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	2	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
16.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	1	1	2	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-
17.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21.6	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.8	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.7	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
27.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
29.8	X	X	X	X	X	-	-	-	-	-	-	-	1	1	2	2	1	1	1	1	1	2	2	1	-	-	-	-	-	-	-	-	-	X	X	X	X
30.7	X	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	X	X	X	X

Table 74b

Coronal observations at Climax, Colorado (6704A), west limb

Date	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Sept. 1.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
22.8	-	-	-	-	-	-	1	1	1	1	1	1	1	2	2	2	3	3	3	-	2	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-
23.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	1	1	1	1	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	X
24.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	2	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-
26.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-
28.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
30.7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

GRAPHS OF IONOSPHERIC DATA

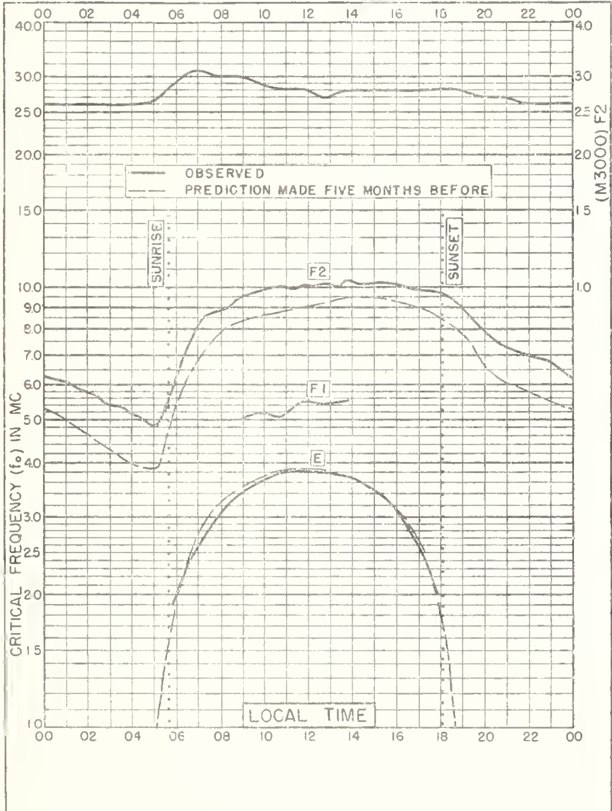

Fig. 1. WASHINGTON, D. C. 38.7°N, 77.1°W SEPTEMBER 1949

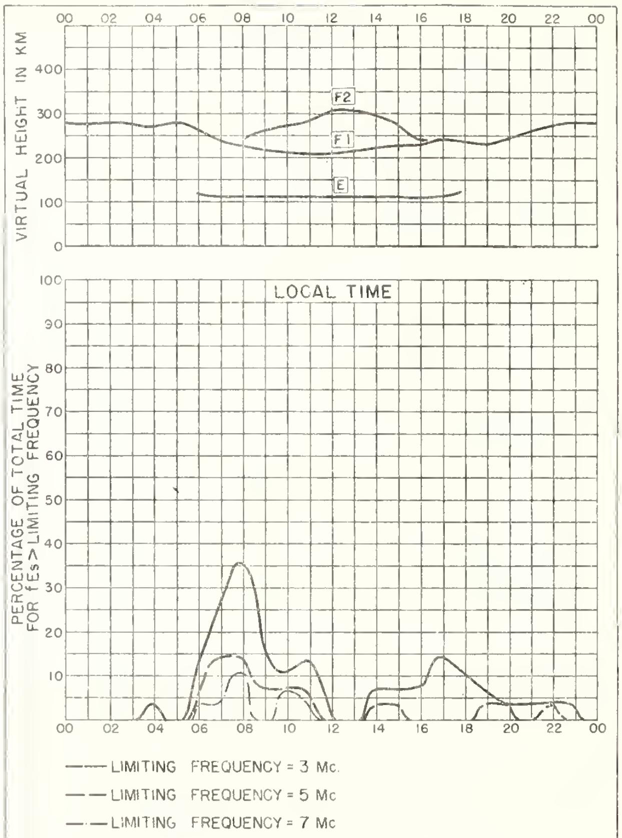

Fig. 2. WASHINGTON, D. C. SEPTEMBER 1949

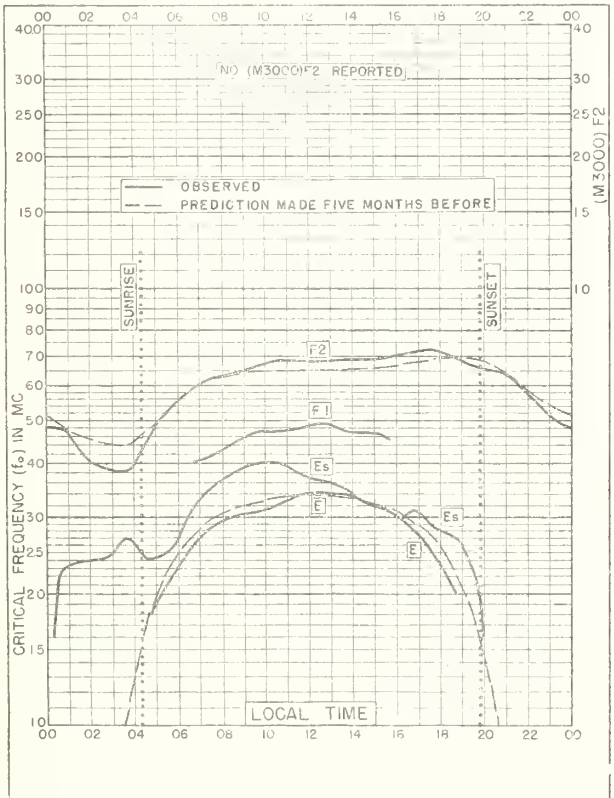

Fig. 3. OSLO, NORWAY 60.0°N, 11.0°E AUGUST 1949

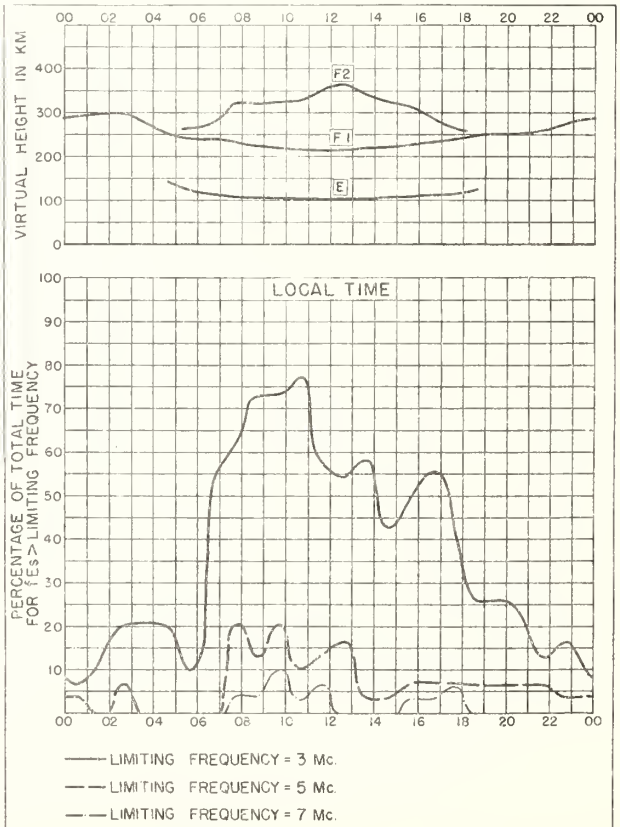

Fig. 4. OSLO, NORWAY AUGUST 1949

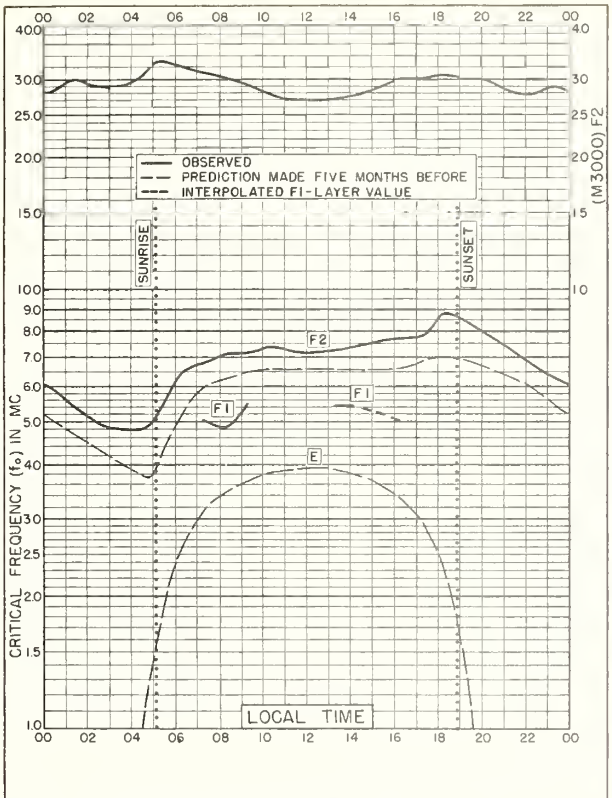

Fig. 5. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W AUGUST 1949

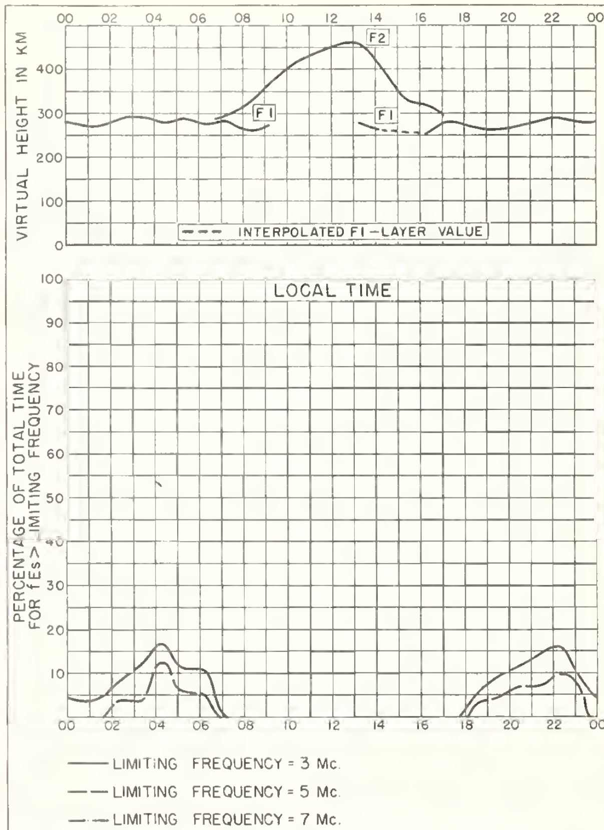

Fig. 6. BOSTON, MASSACHUSETTS AUGUST 1949

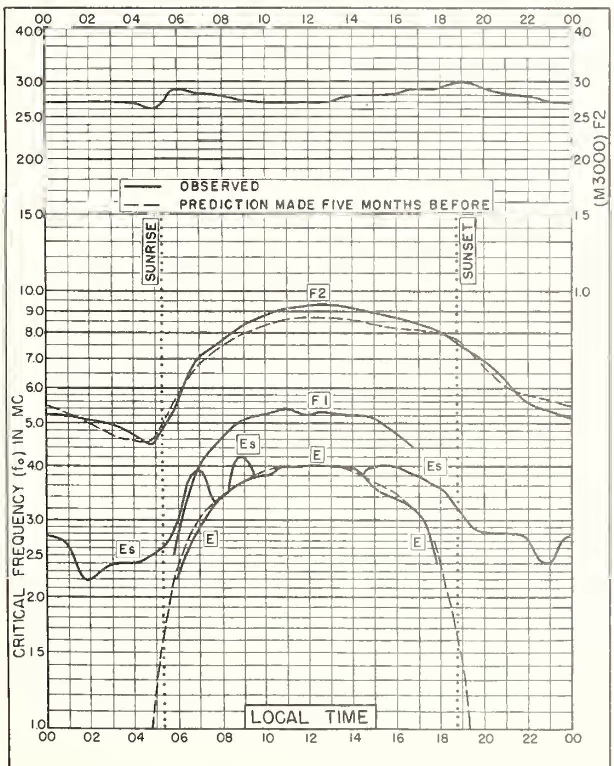

Fig. 7. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W AUGUST 1949

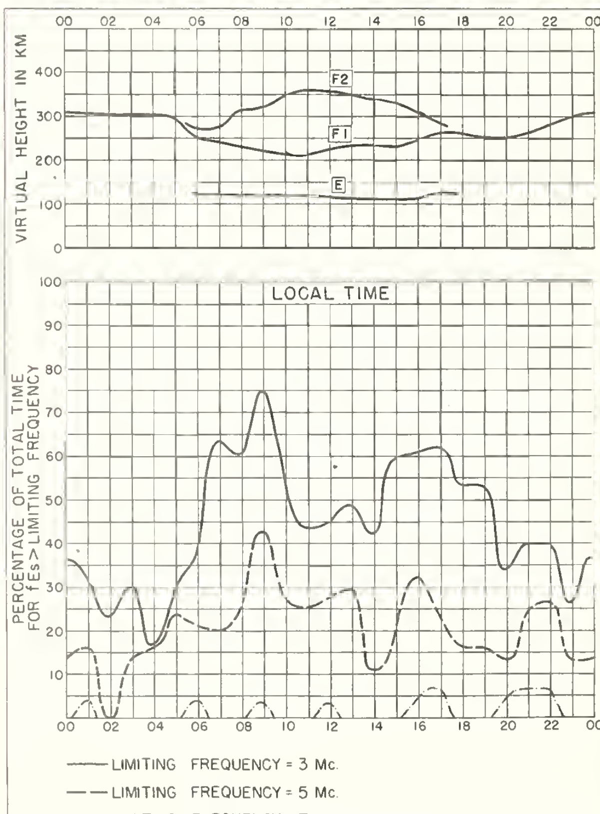

Fig 8. SAN FRANCISCO, CALIFORNIA AUGUST 1949

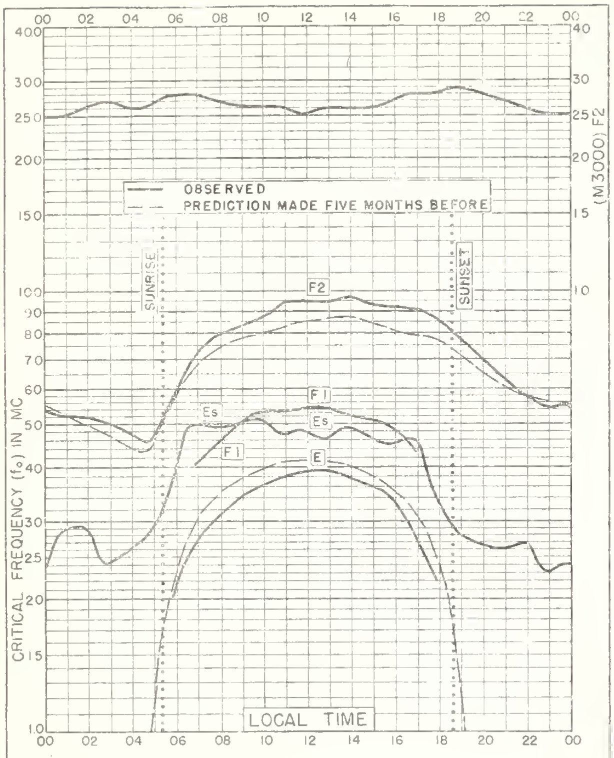

Fig. 9. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W AUGUST 1949

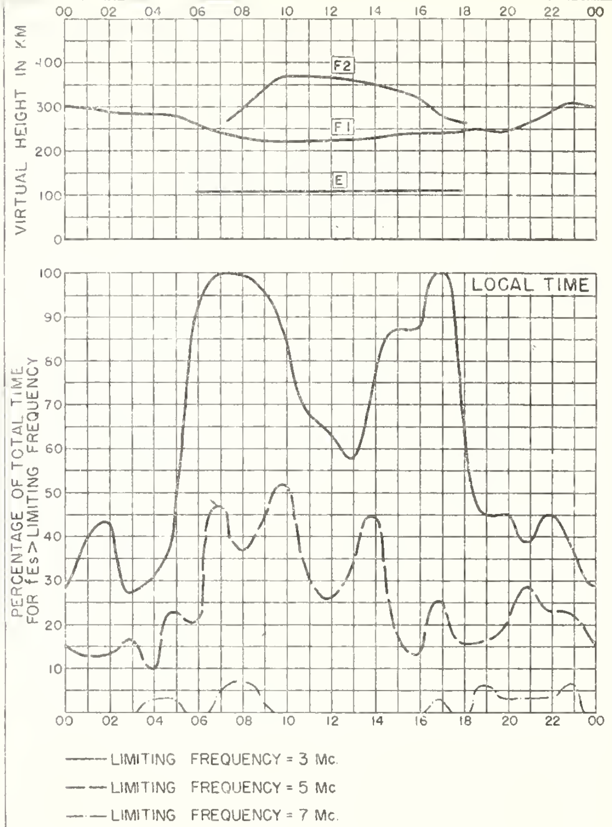

Fig. 10. WHITE SANDS, NEW MEXICO AUGUST 1949

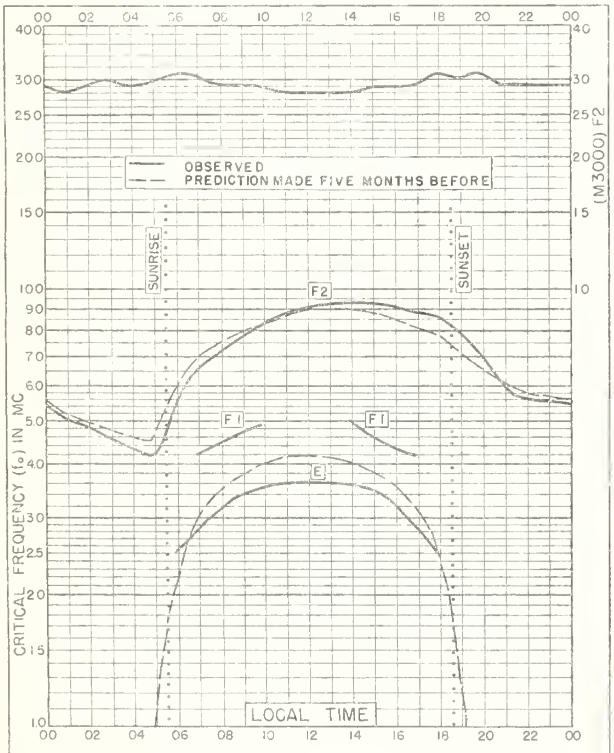

Fig. 11. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W AUGUST 1949

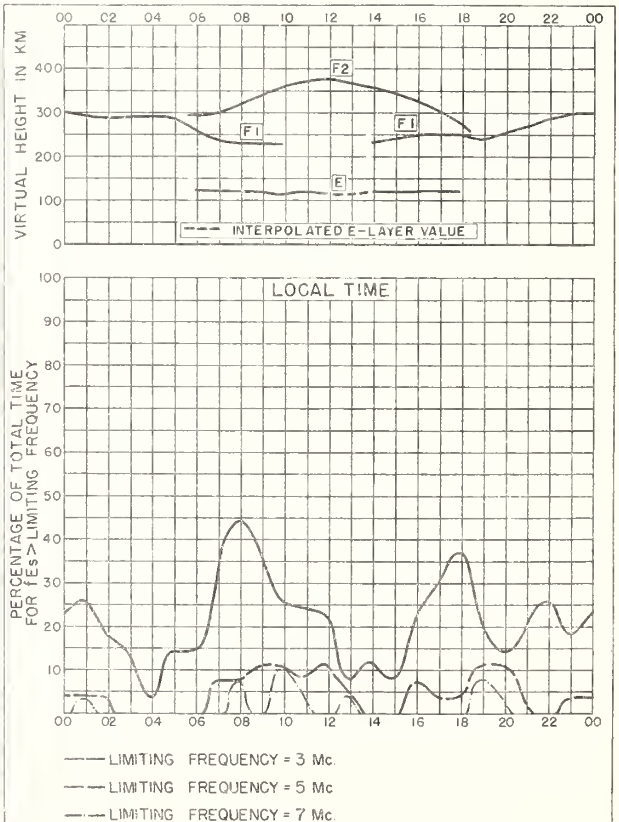

Fig. 12. BATON ROUGE, LOUISIANA AUGUST 1949

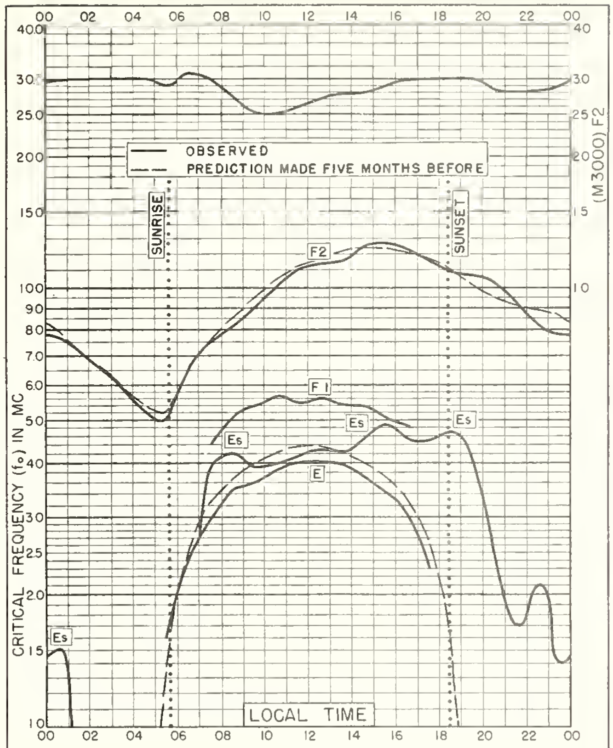

Fig. 13. MAUI, HAWAII
20.8°N, 156.5°W AUGUST 1949

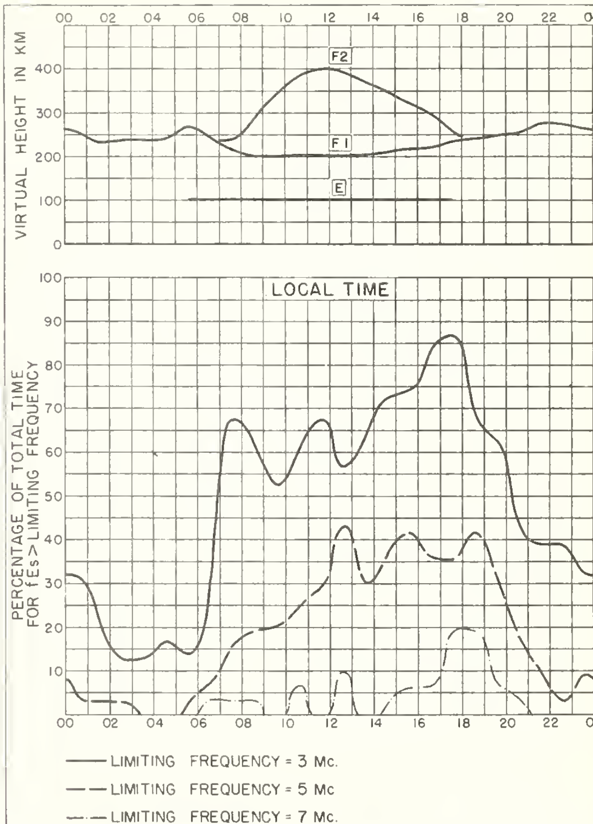

Fig. 14. MAUI, HAWAII AUGUST 1949

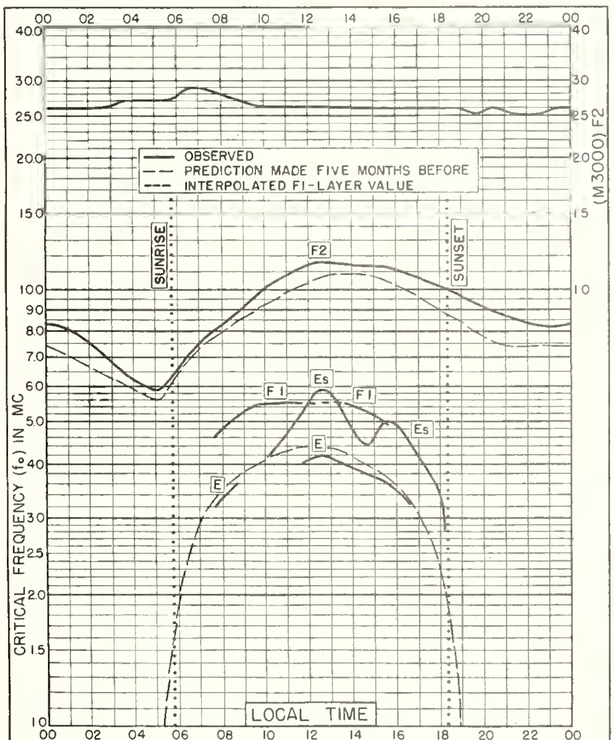

Fig. 15. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W AUGUST 1949

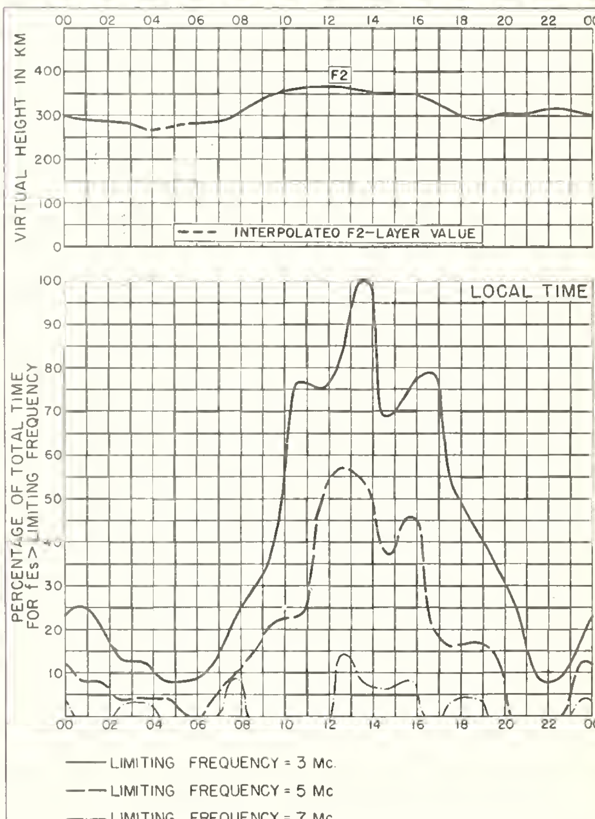

Fig. 16. SAN JUAN, PUERTO RICO AUGUST 1949

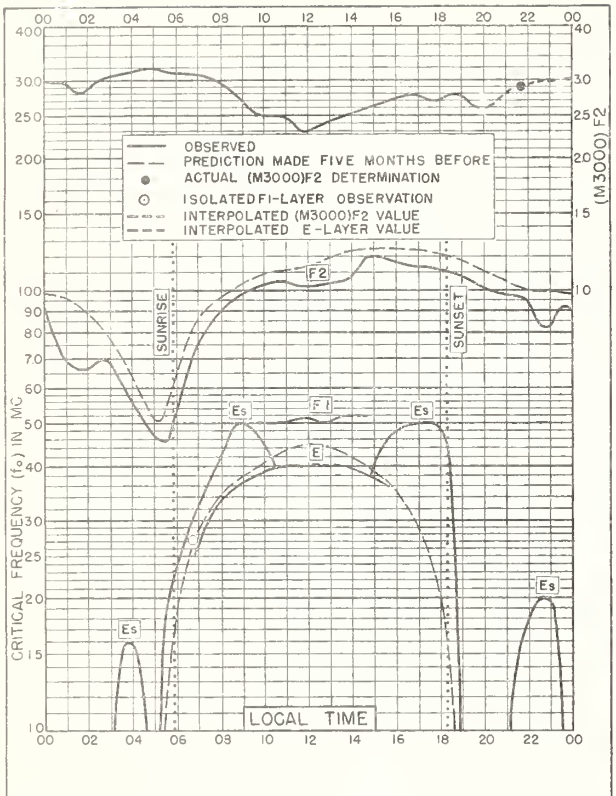

Fig. 17 GUAM I.
13.6°N, 144.9°E AUGUST 1949

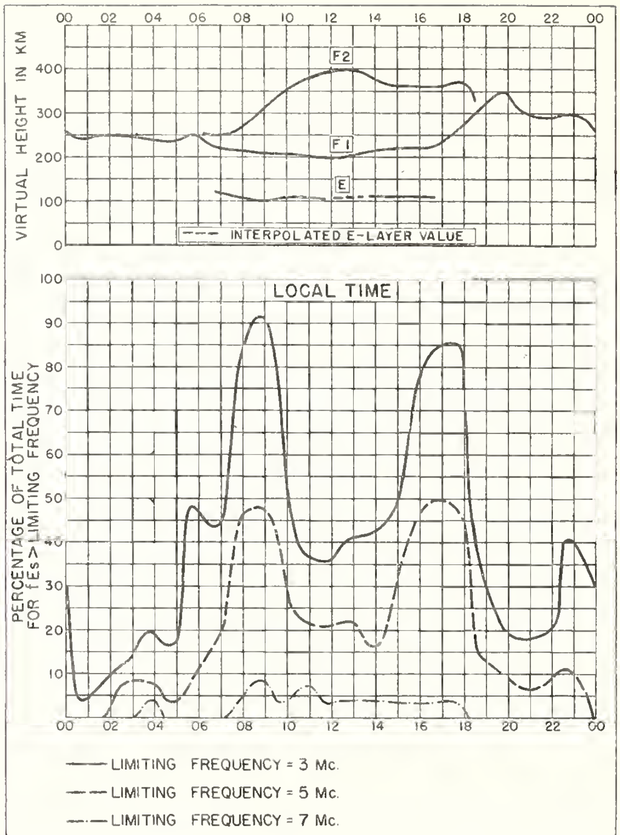

Fig 18. GUAM I. AUGUST 1949

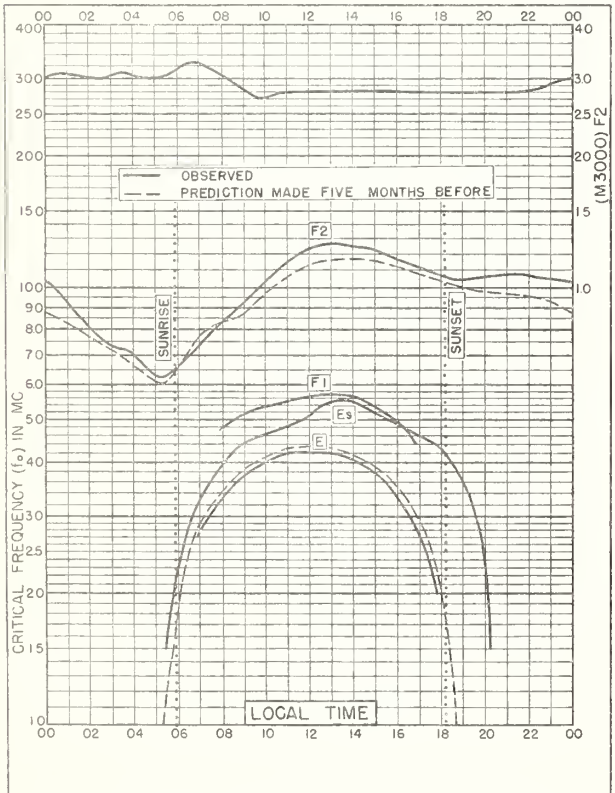

Fig. 19 TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W AUGUST 1949

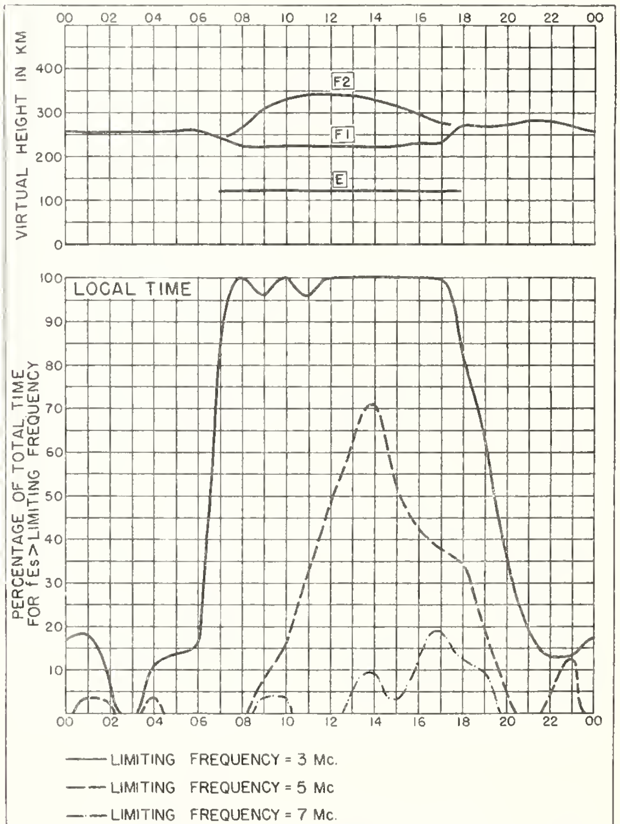

Fig 20. TRINIDAD, BRIT WEST INDIES AUGUST 1949

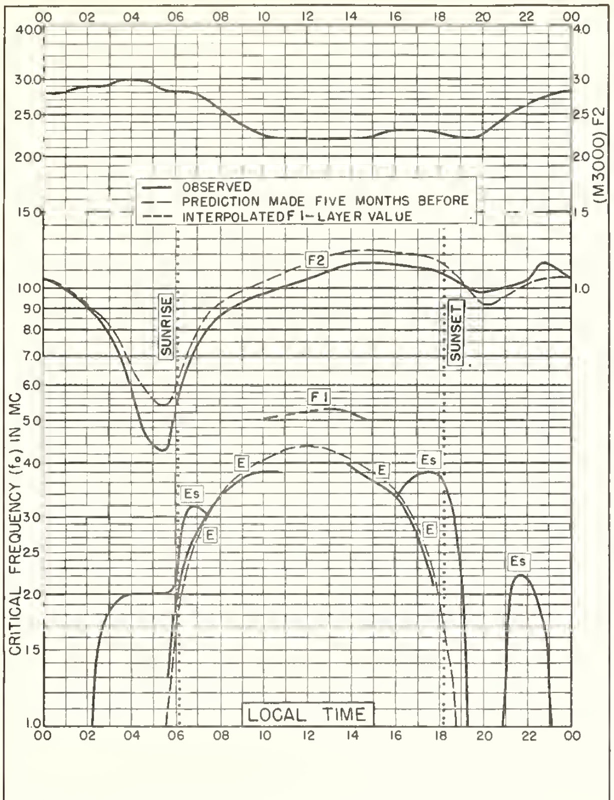

Fig. 21 PALMYRA I
5.9°N, 162.1°W AUGUST 1949

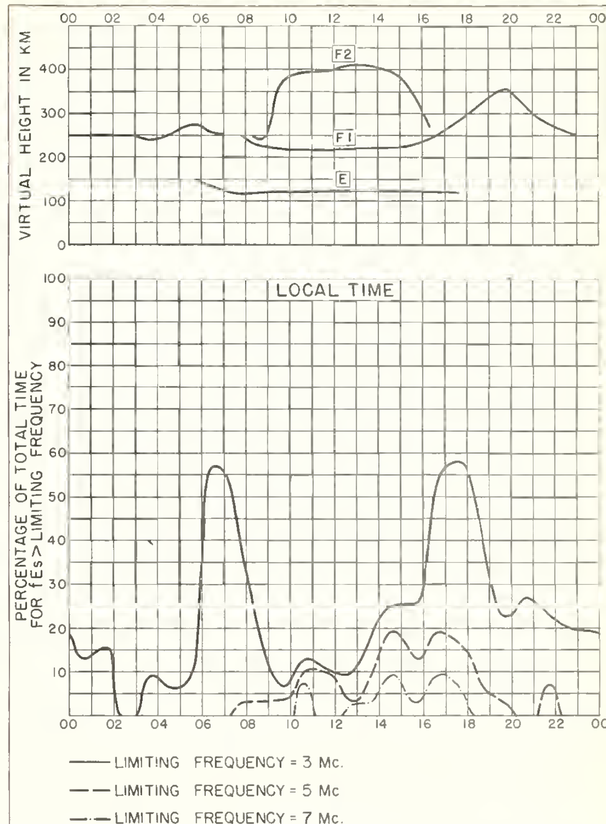

Fig 22. PALMYRA I AUGUST 1949

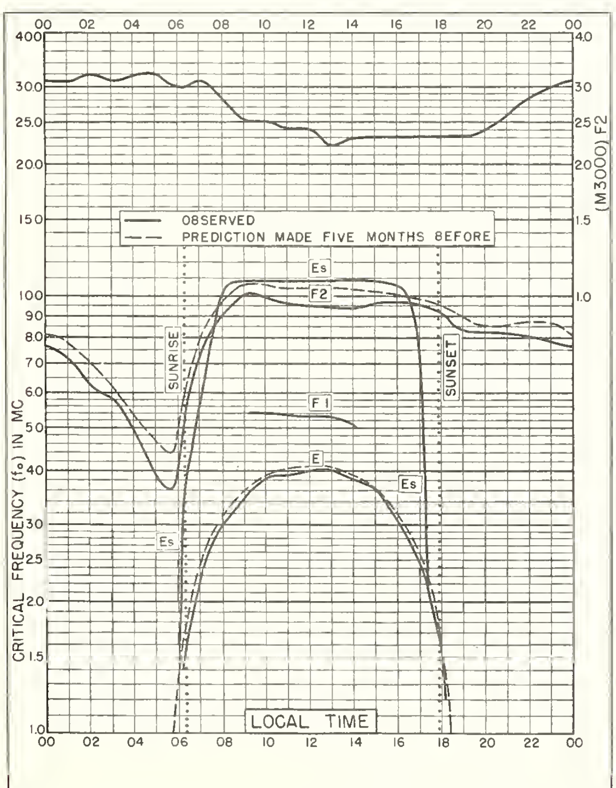

Fig 23. HUANCAYO, PERU
12.0°S, 75.3°W AUGUST 1949

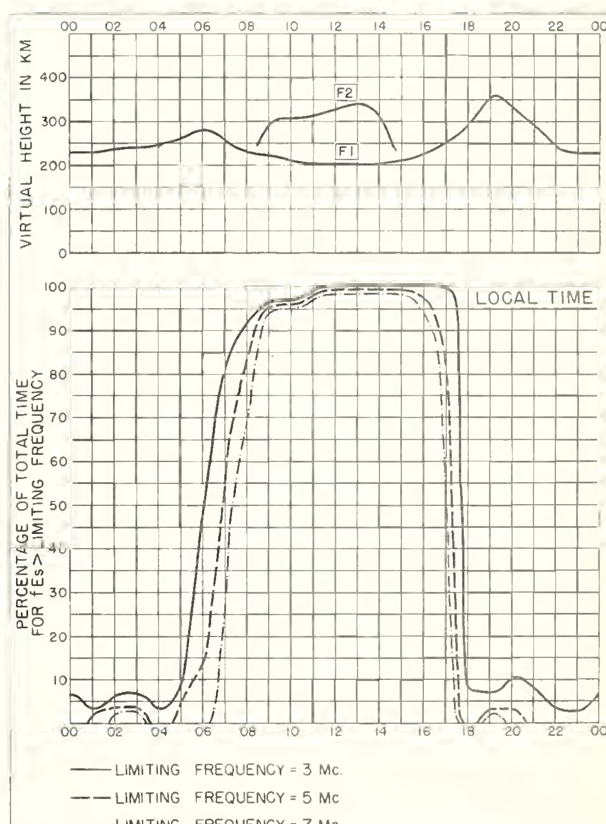

Fig. 24. HUANCAYO, PERU AUGUST 1949

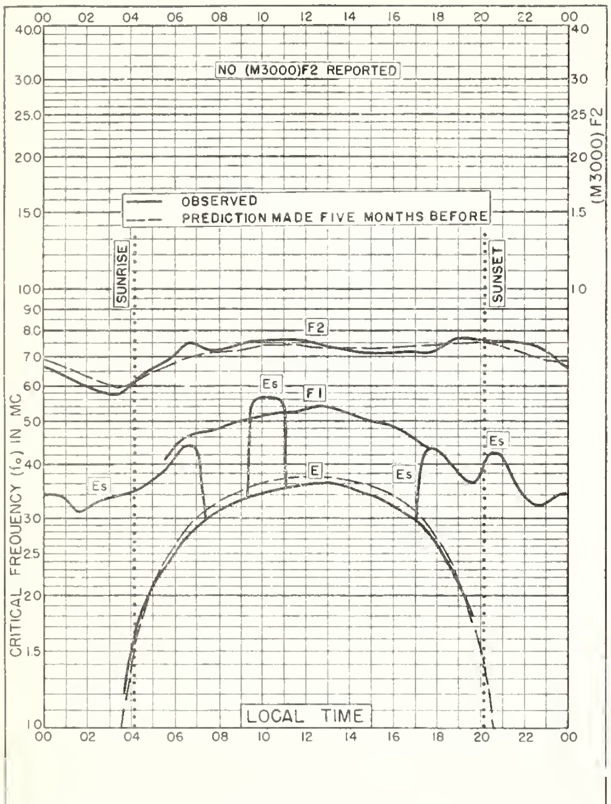

Fig. 25. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E JULY 1949

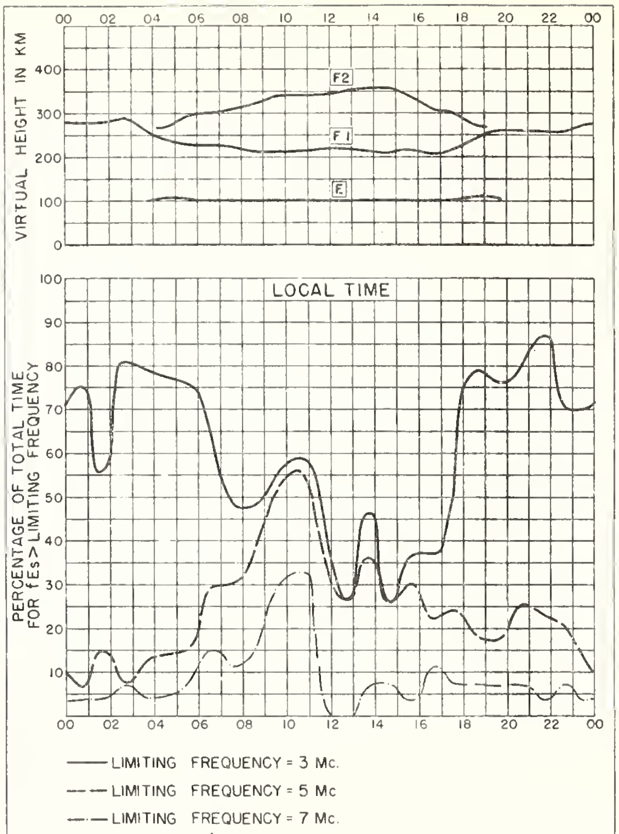

Fig. 26. LINDAU/HARZ, GERMANY JULY 1949

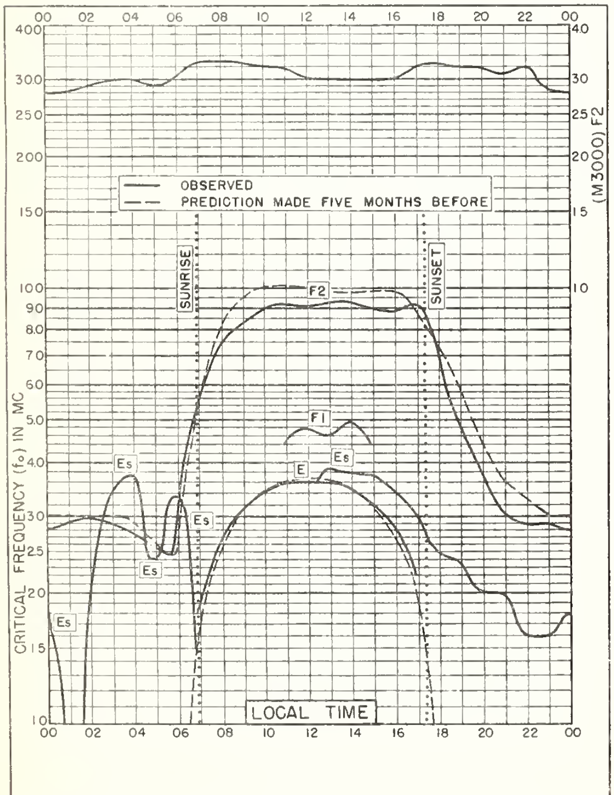

Fig 27 JOHANNESBURG, U. OF S AFRICA
26.2°S, 28.0°E JULY 1949

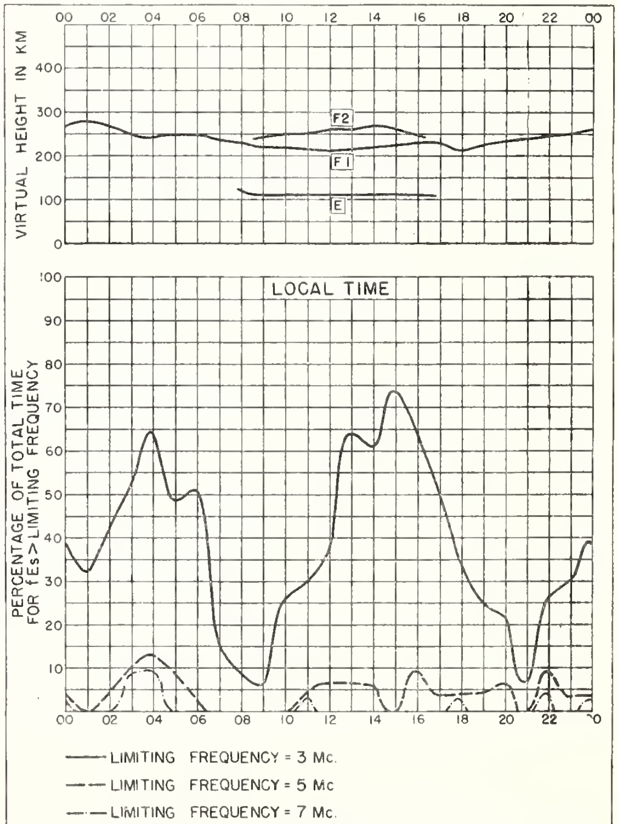

Fig 28 JOHANNESBURG, U. OF S. AFRICA JULY 1949

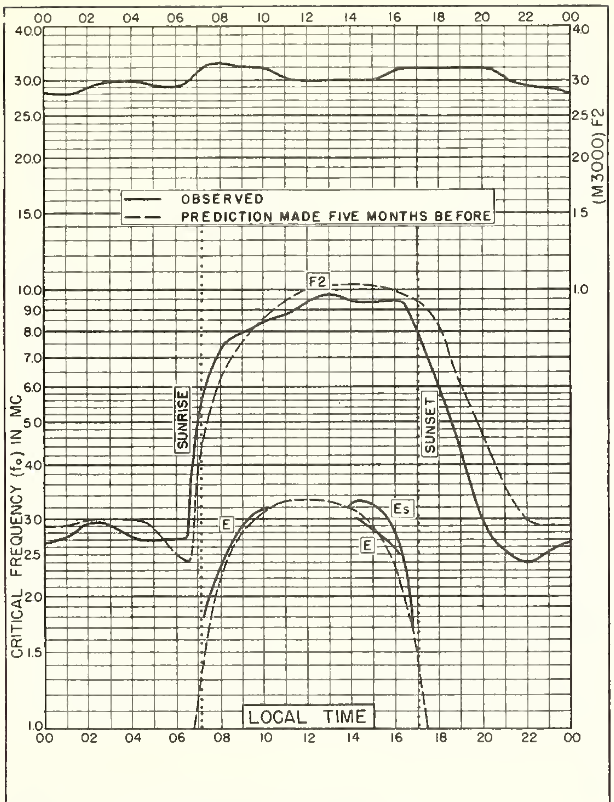

Fig 29. CAPETOWN, U. OF S. AFRICA
34.2°S, 18.3°E JULY 1949

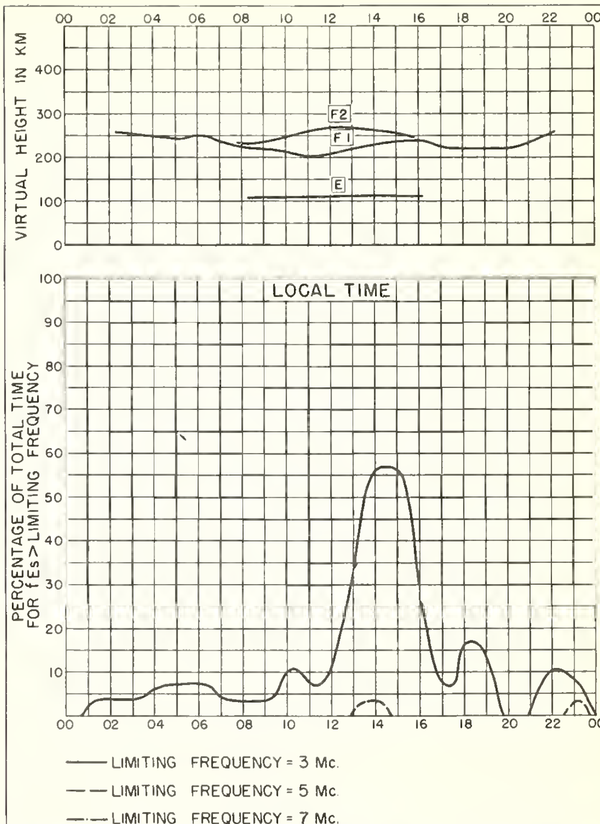

Fig. 30 CAPETOWN, U. OF S. AFRICA JULY 1949

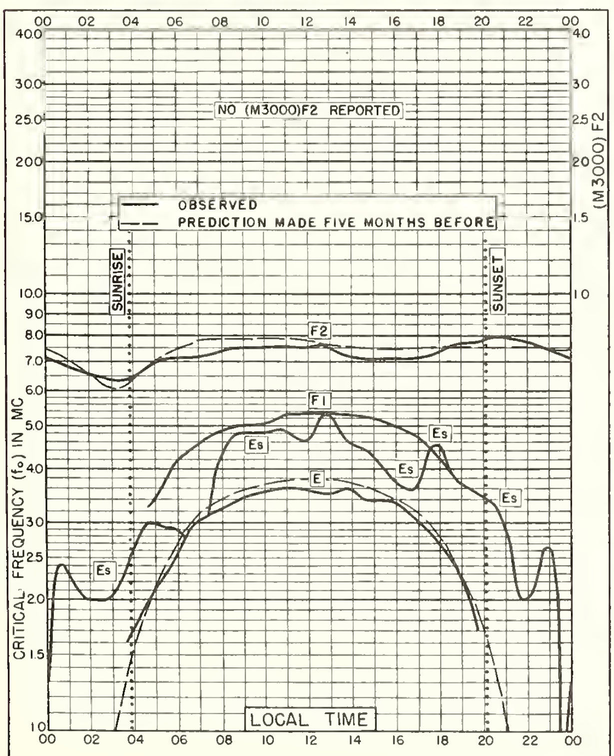

Fig. 31. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E JUNE 1949

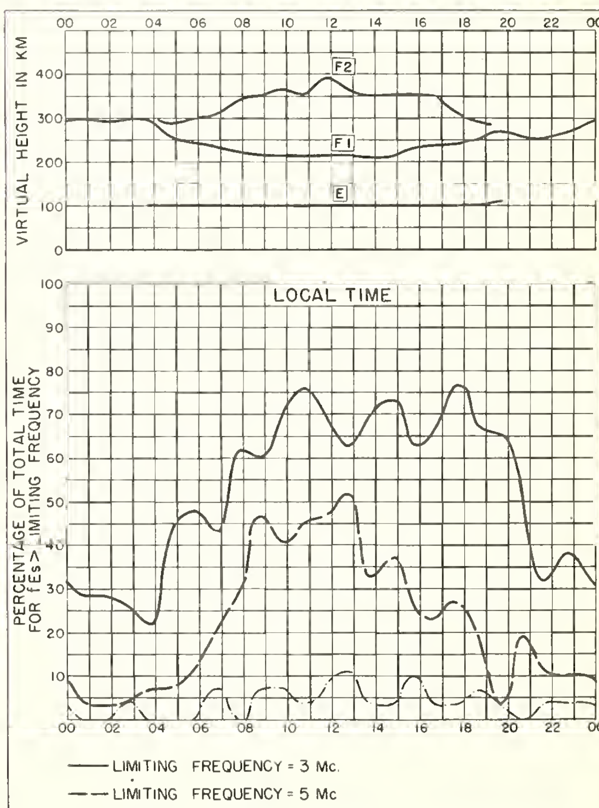

Fig. 32. LINDAU/HARZ, GERMANY JUNE 1949

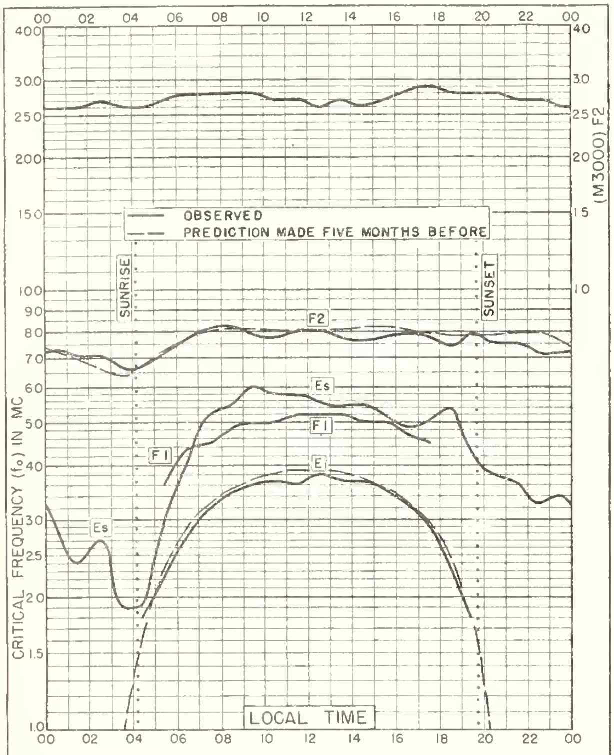

Fig. 33 WAKKANAI, JAPAN
45.4°N, 141.7°E JUNE 1949

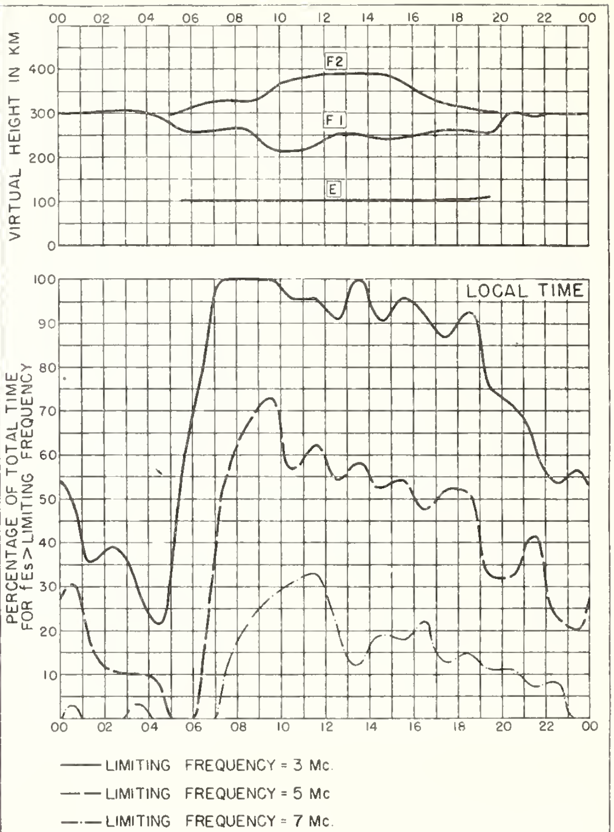

Fig. 34 WAKKANAI, JAPAN JUNE 1949

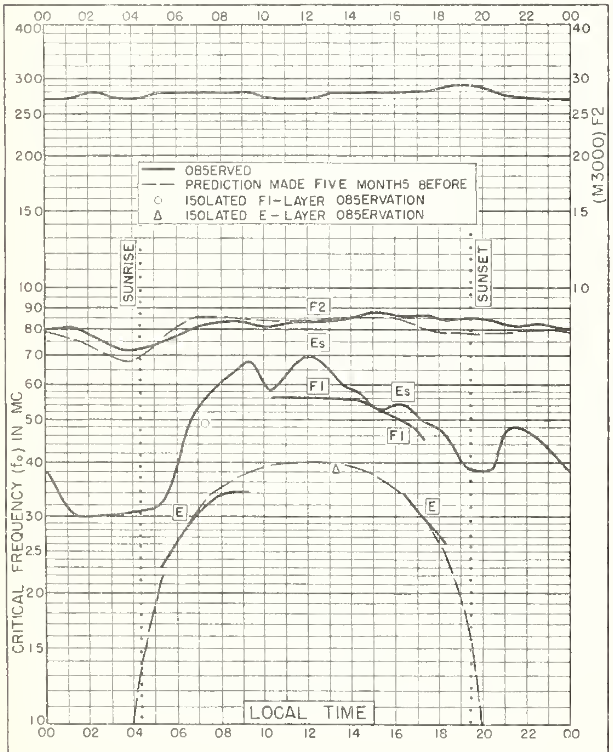

Fig. 35 FUKAURA, JAPAN
40.6°N, 139.9°E JUNE 1949

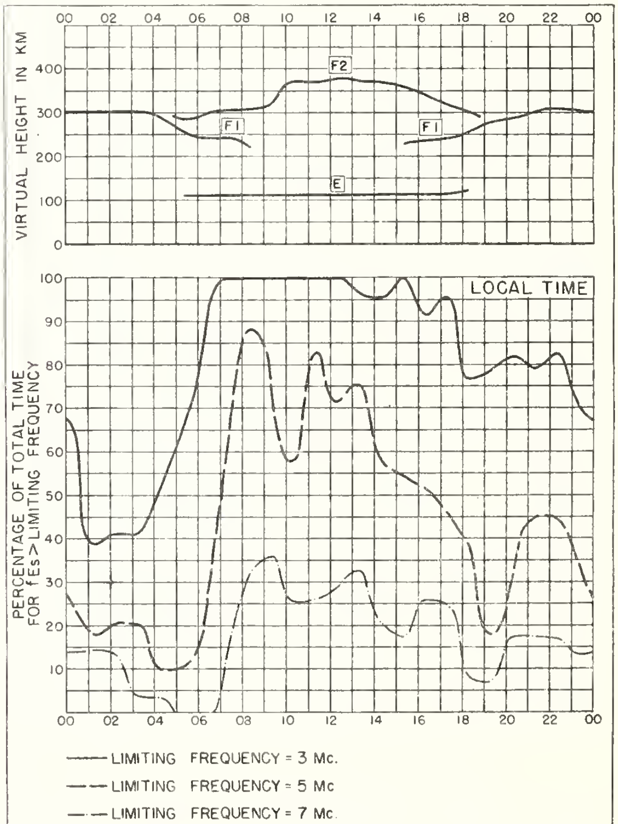

Fig. 36 FUKAURA, JAPAN JUNE 1949

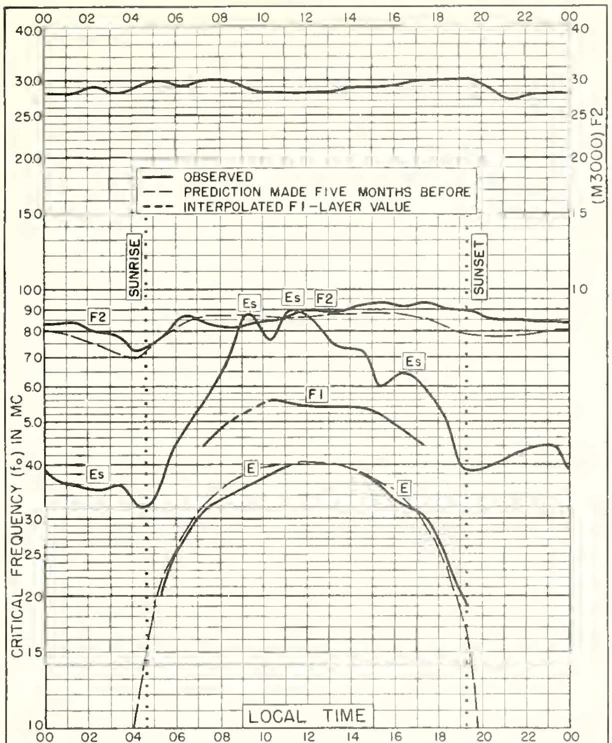

Fig. 37 SHIBATA, JAPAN
37.9°N, 139.3°E JUNE 1949

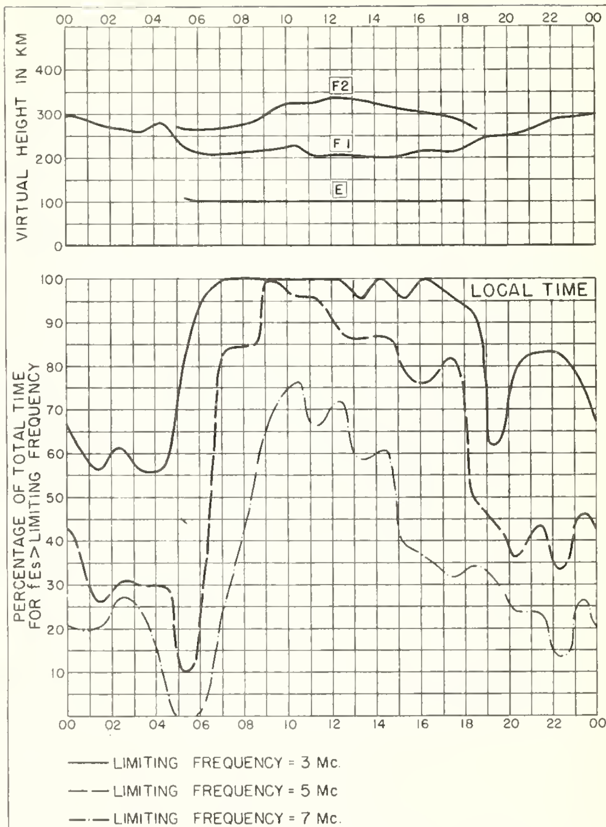

Fig. 38 SHIBATA, JAPAN JUNE 1949

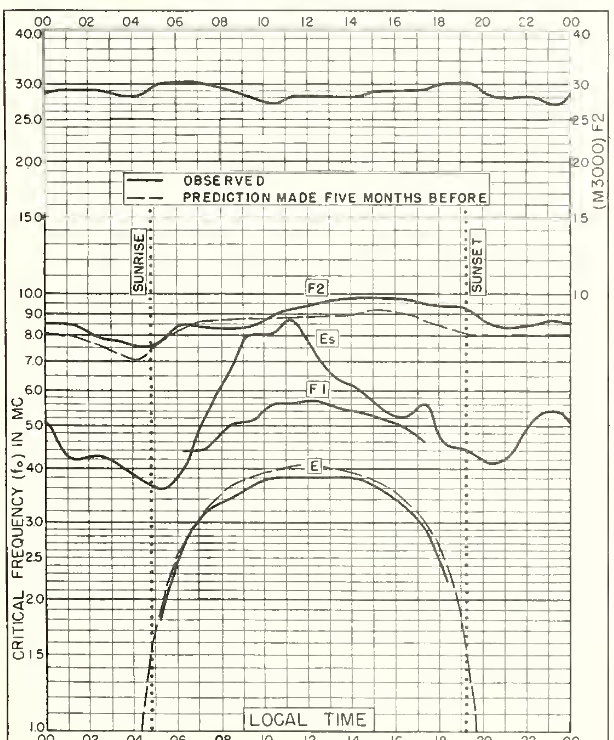

Fig. 39 TOKYO, JAPAN
35.7°N, 139.5°E JUNE 1949

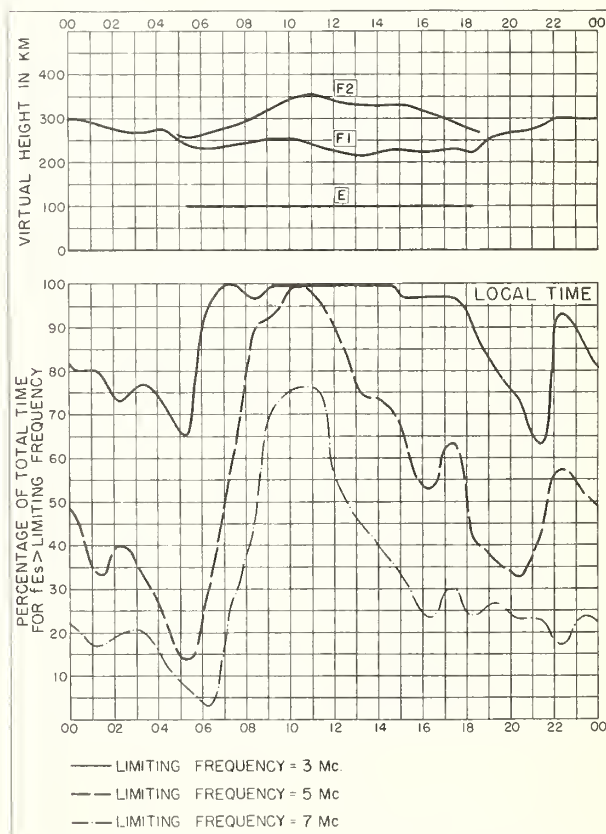

Fig. 40. TOKYO, JAPAN JUNE 1949

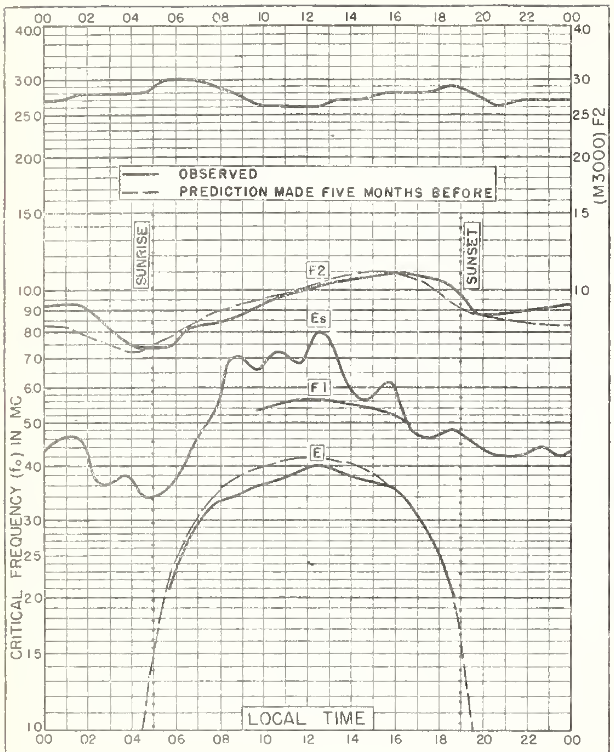

Fig. 41. YAMAKAWA, JAPAN
31.2°N, 130.6°E JUNE 1949

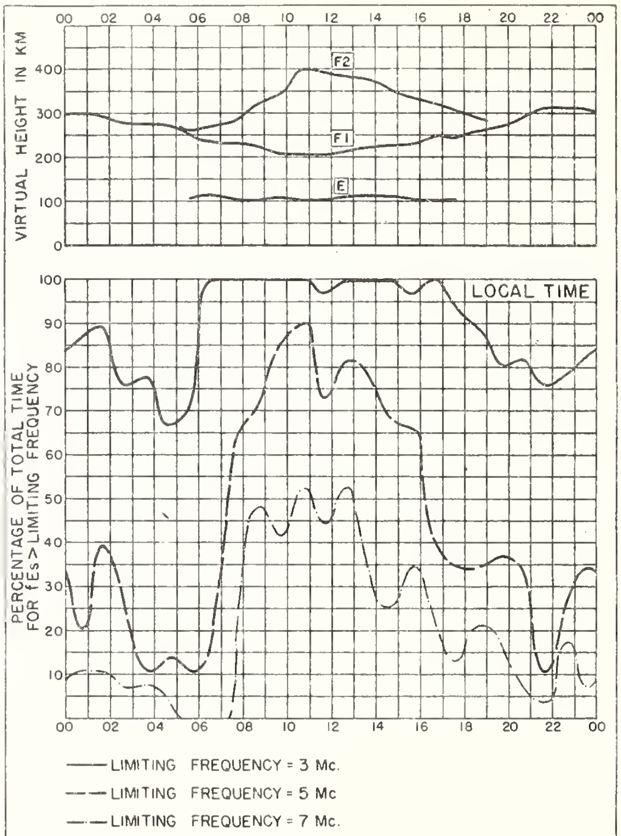

Fig. 42. YAMAKAWA, JAPAN JUNE 1949

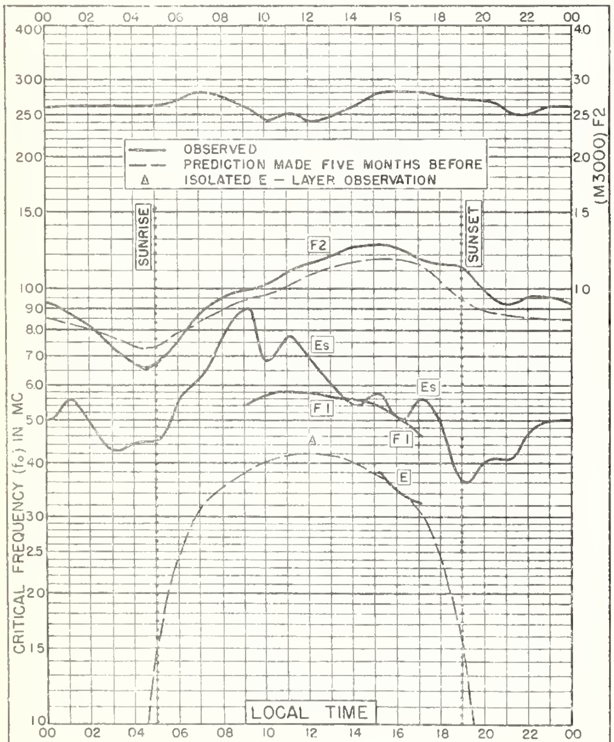

Fig. 43 CHUNGKING, CHINA
29.4°N, 106.8°E JUNE 1949

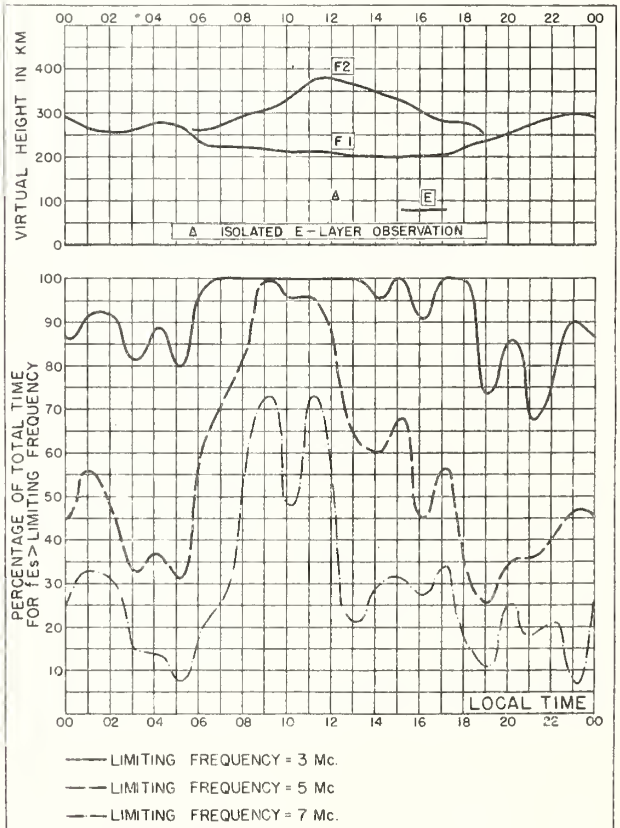

Fig. 44 CHUNGKING, CHINA JUNE 1949

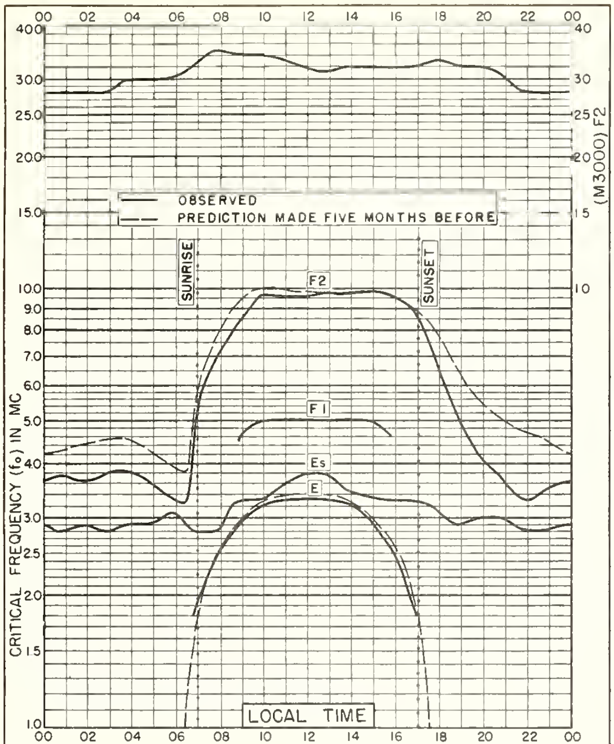

Fig 45. WATHEROO, W AUSTRALIA
30.3°S, 115.9°E JUNE 1949

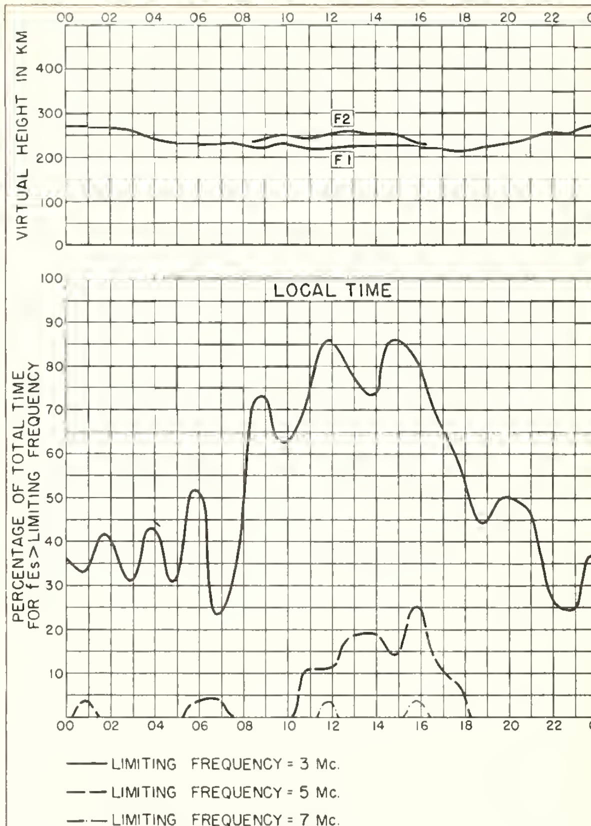

Fig 46. WATHEROO, W AUSTRALIA JUNE 1949

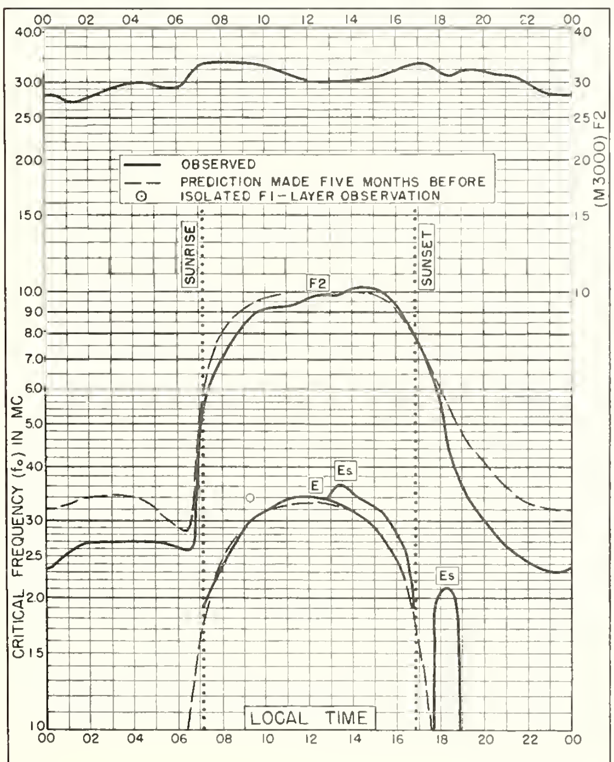

Fig. 47 CAPETOWN, U. OF S AFRICA
34.2°S, 18.3°E JUNE 1949

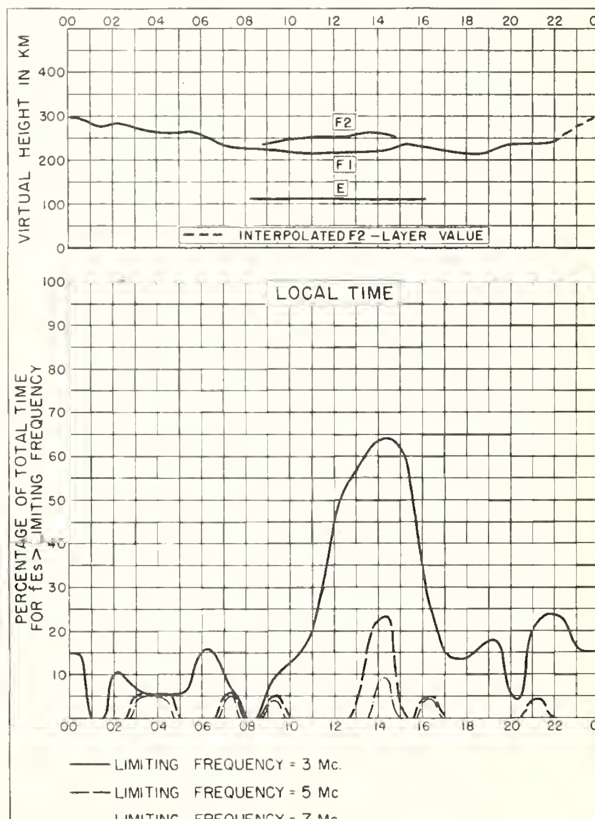

Fig. 48. CAPETOWN, U. OF S. AFRICA JUNE 1949

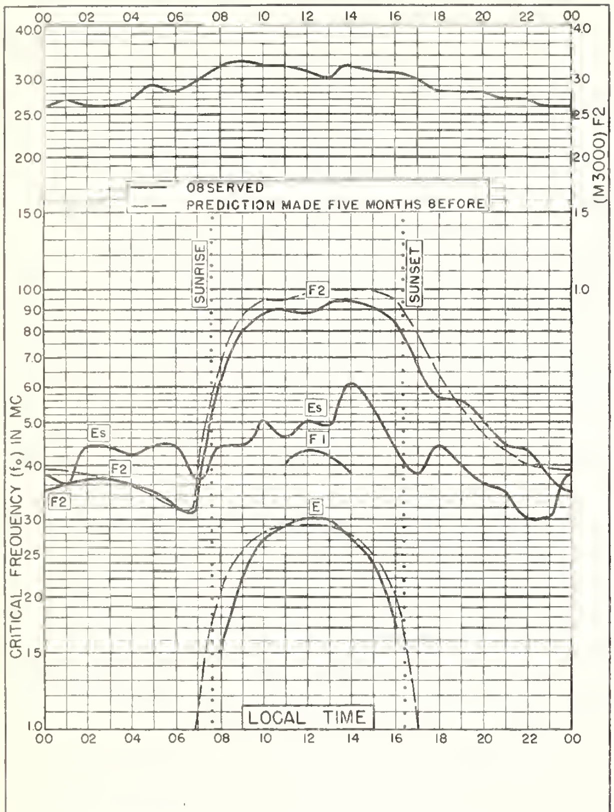

Fig 49 CHRISTCHURCH, N. Z.
43.5°S, 172.7°E JUNE 1949

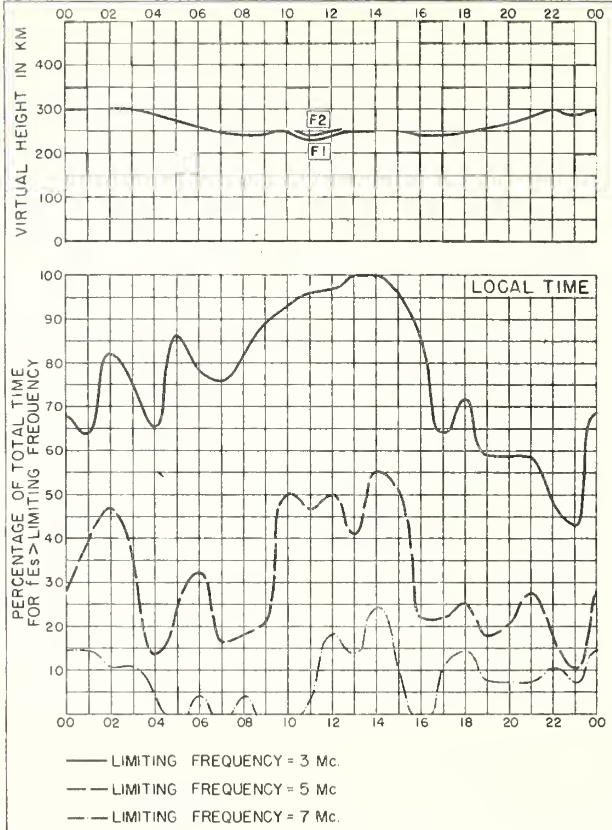

Fig. 50 CHRISTCHURCH, N. Z. JUNE 1949

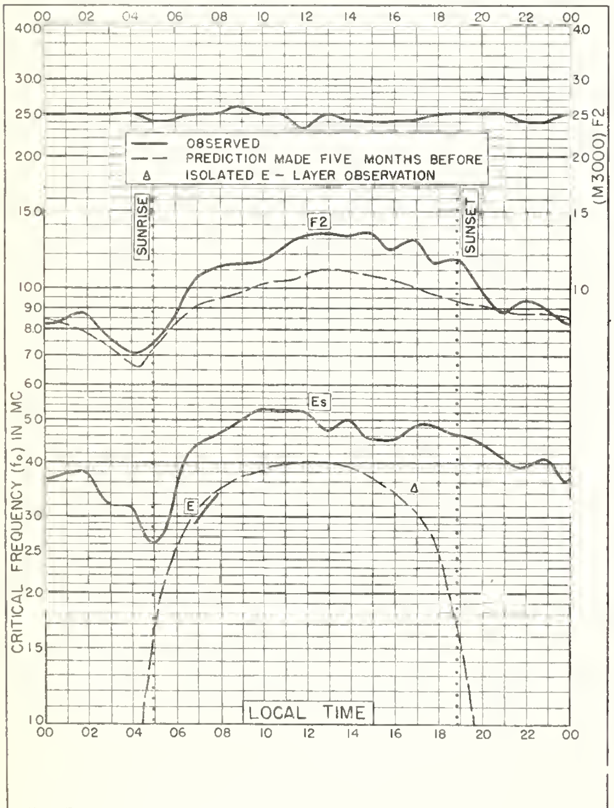

Fig. 51 LANCHOW, CHINA
36.1°N, 103.8°E MAY 1949

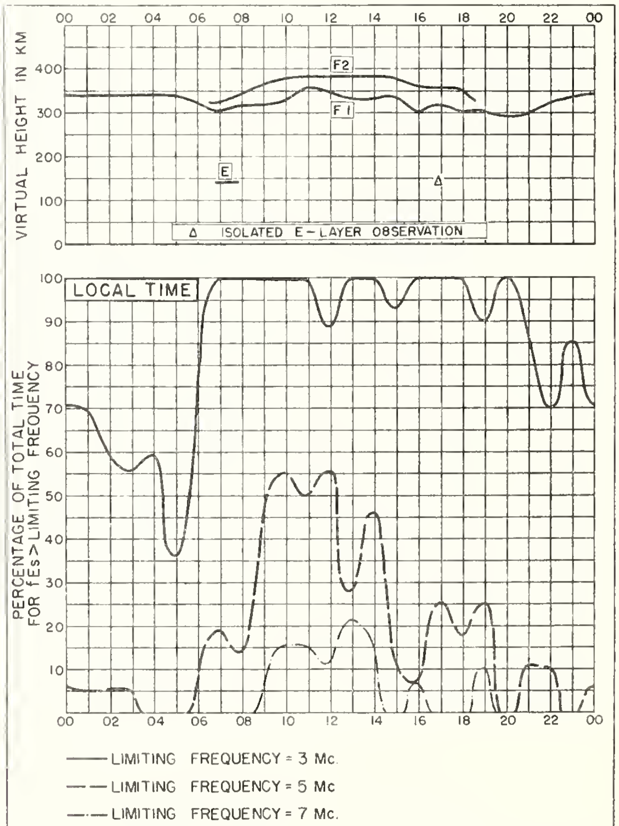

Fig. 52 LANCHOW, CHINA MAY 1949

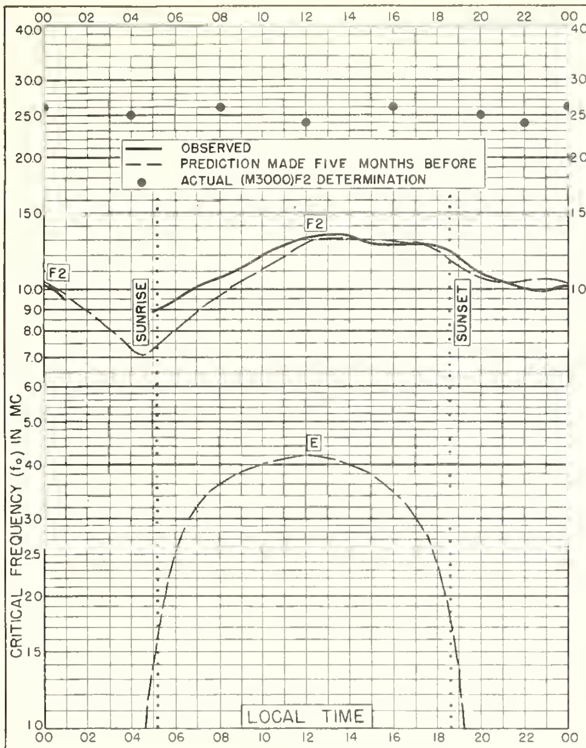

Fig. 53. DELHI, INDIA
28.6°N, 77.1°E MAY 1949

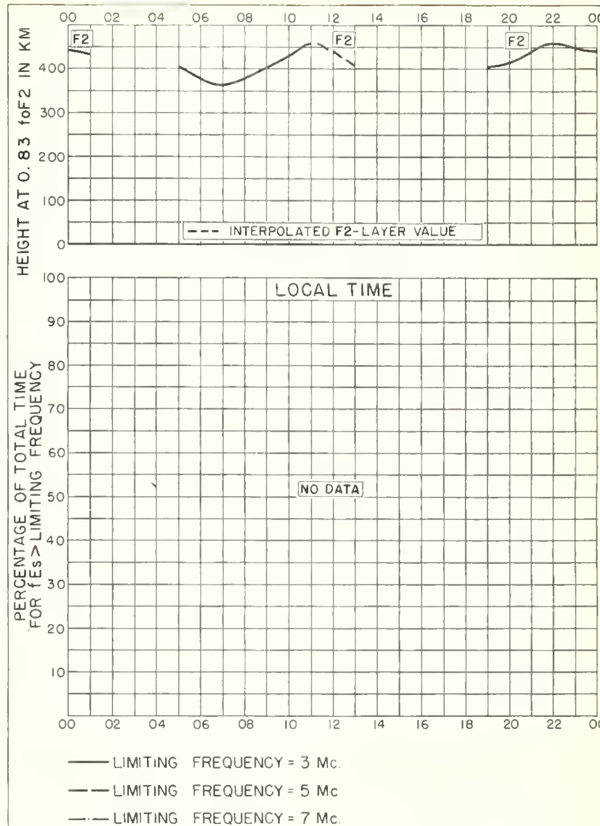

Fig. 54 DELHI, INDIA MAY 1949

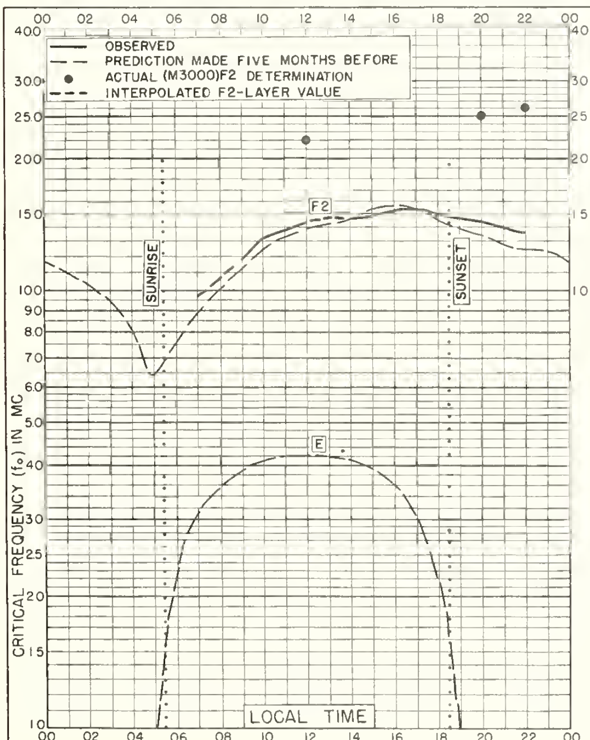

Fig. 55. BOMBAY, INDIA
19.0°N, 73.0°E MAY 1949

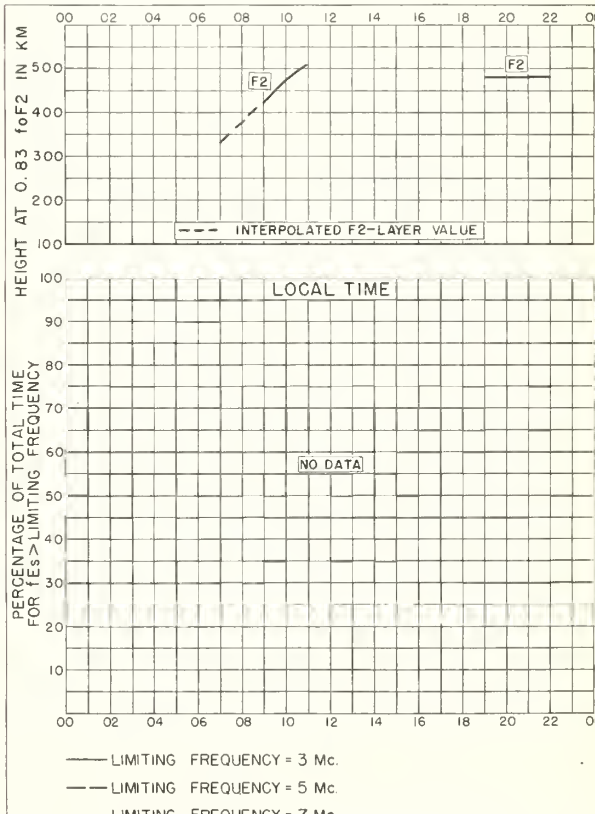

Fig. 56 BOMBAY, INDIA MAY 1949

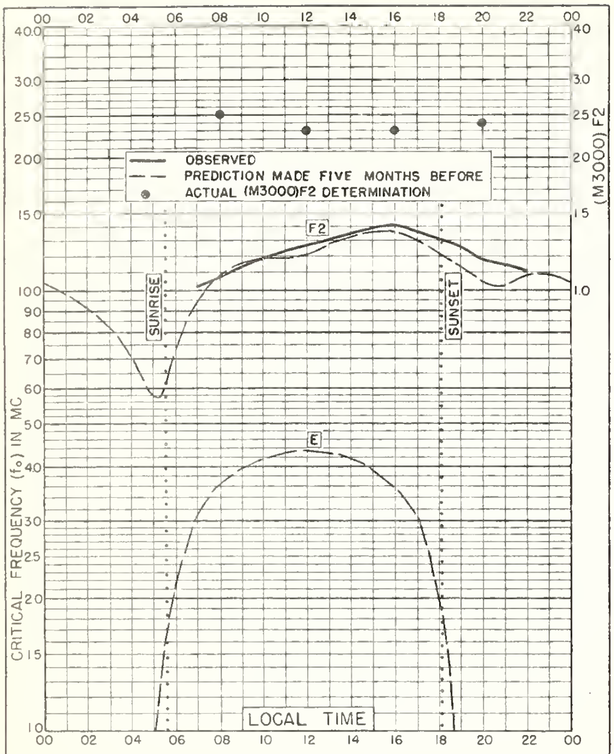

Fig. 57 MADRAS, INDIA
13.0°N, 80. 2°E MAY 1949

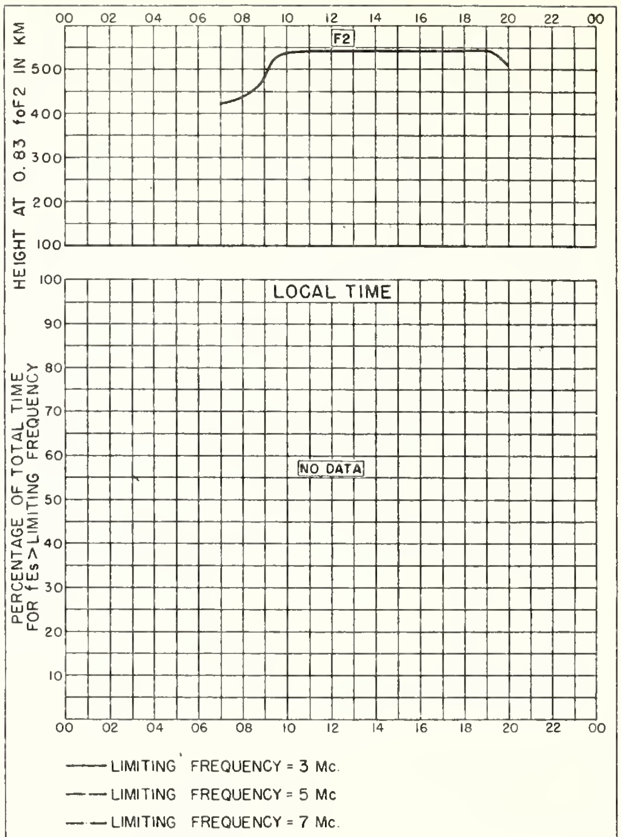

Fig. 58 MADRAS, INDIA MAY 1949

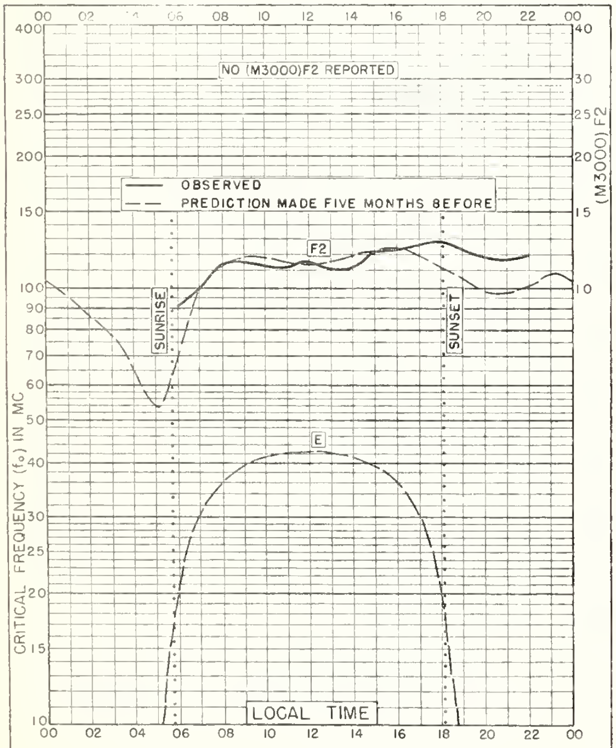

Fig. 59 TIRUCHIRAPALLI, INDIA
10.8°N, 78.8°E MAY 1949

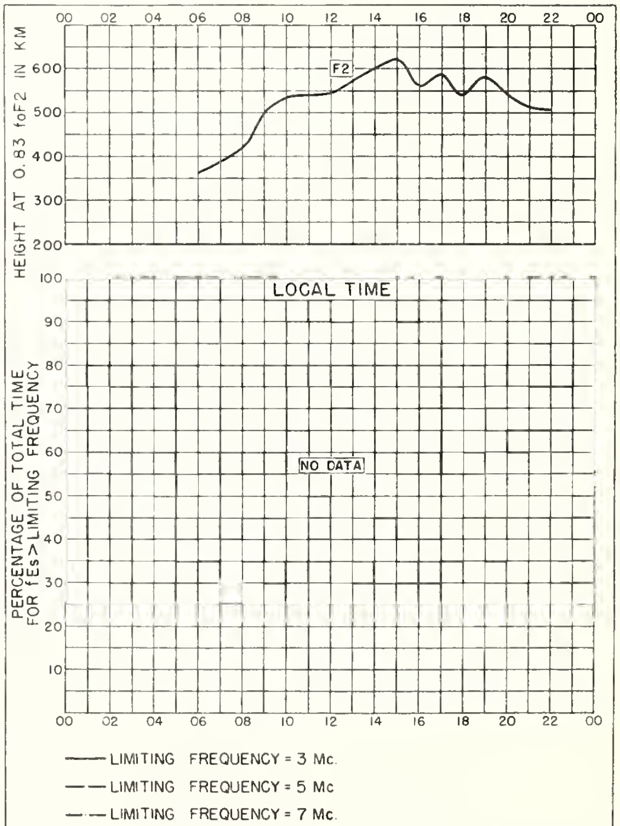

Fig. 60 TIRUCHIRAPALLI, INDIA MAY 1949

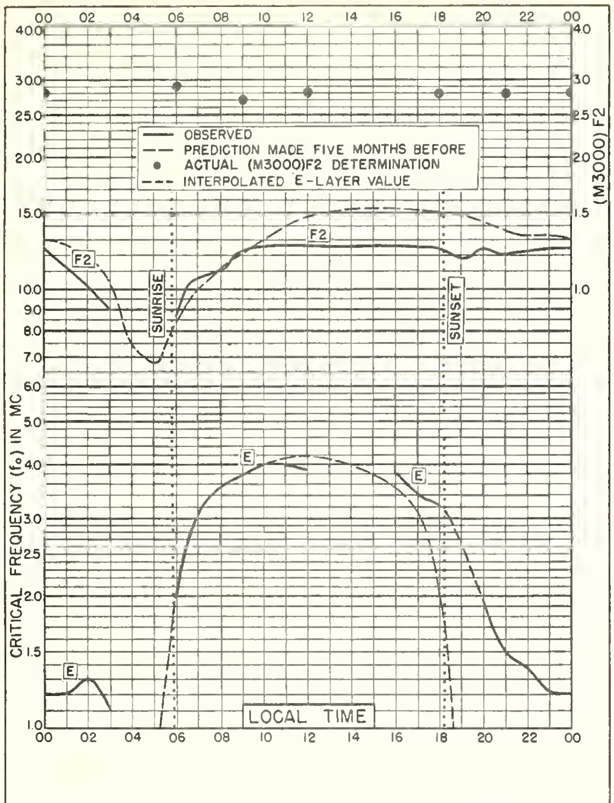

Fig. 61. CALCUTTA, INDIA
22.6°N, 88.4°E APRIL 1949

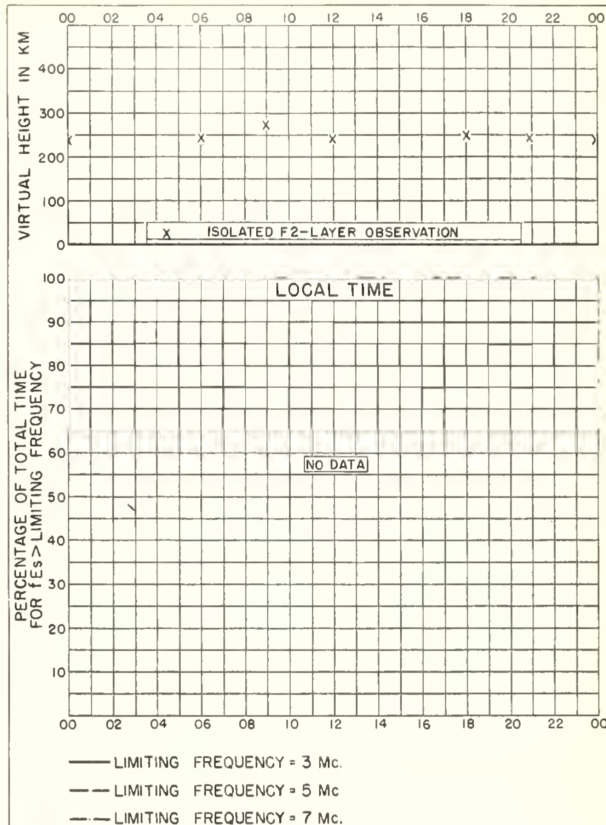

Fig. 62. CALCUTTA, INDIA APRIL 1949

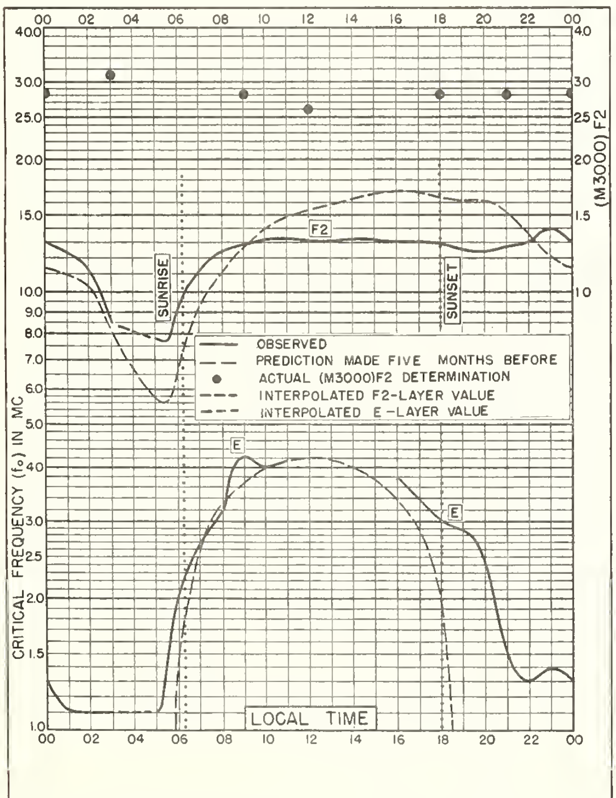

Fig 63. CALCUTTA, INDIA
22.6°N, 88.4°E MARCH 1949

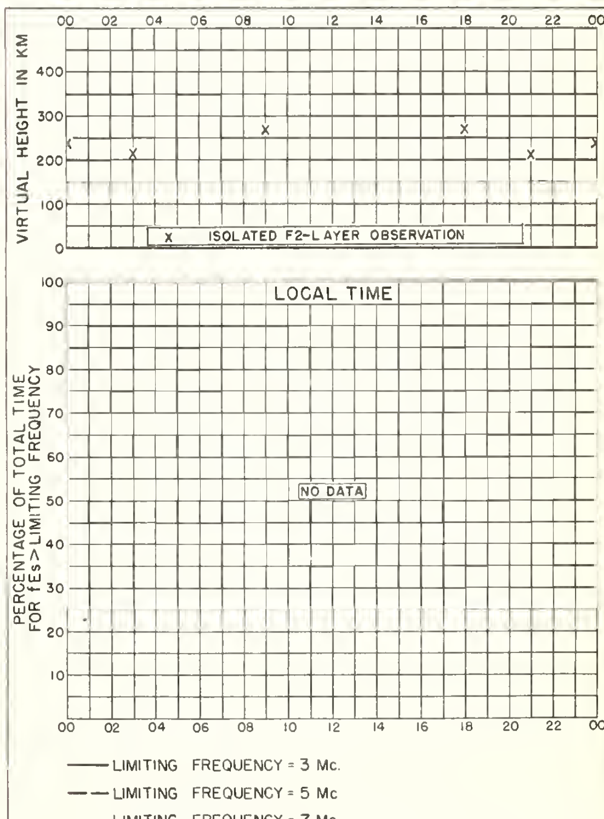

Fig. 64. CALCUTTA, INDIA MARCH 1949

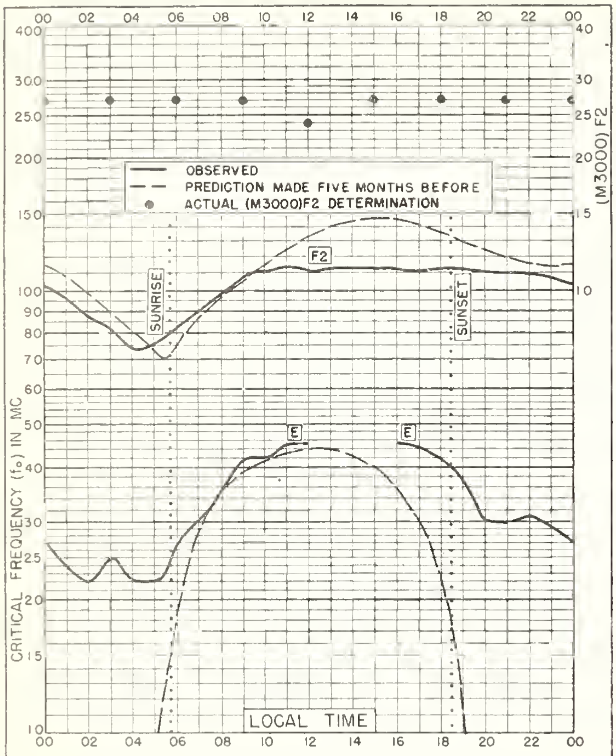

Fig. 65. CALCUTTA, INDIA
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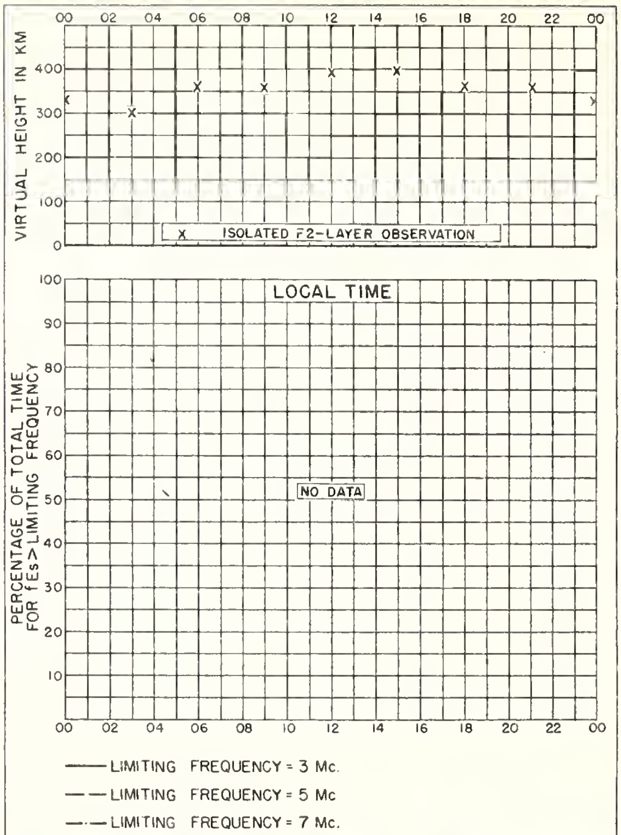

Fig. 66 CALCUTTA, INDIA AUGUST 1948

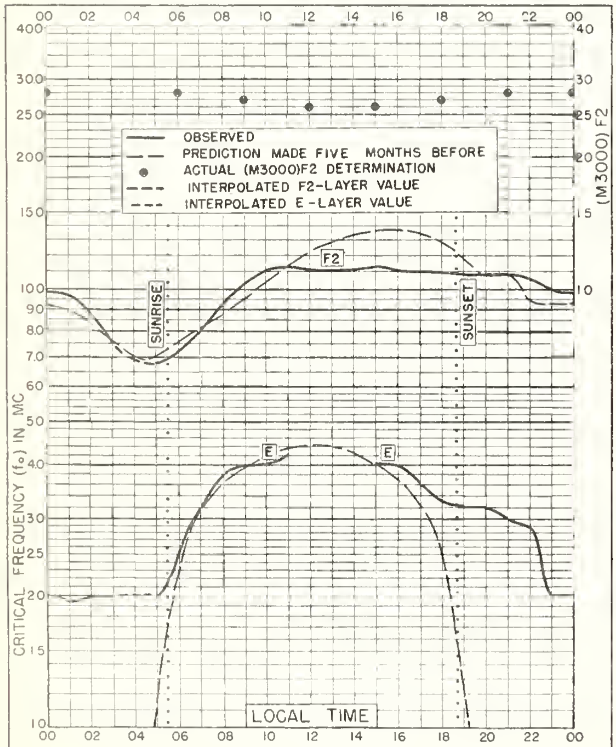

Fig. 67 CALCUTTA, INDIA
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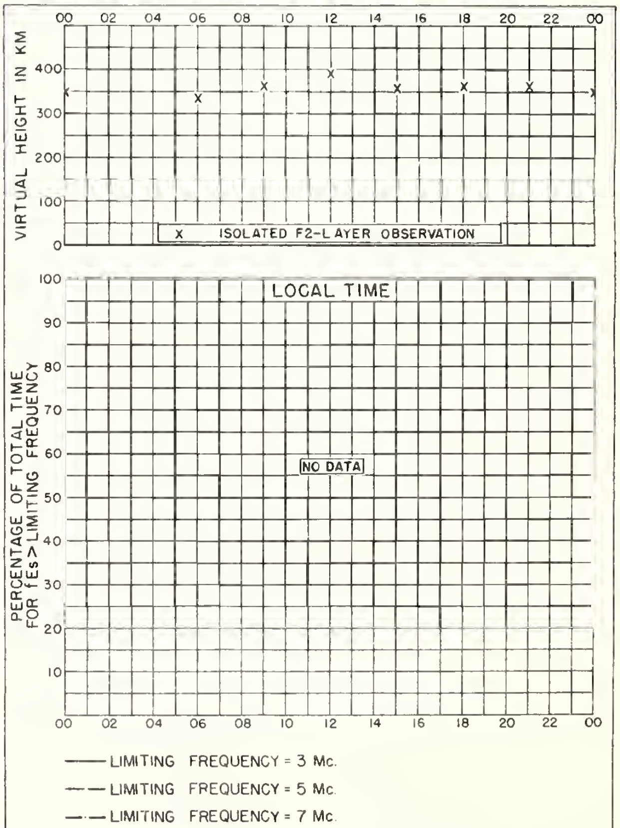

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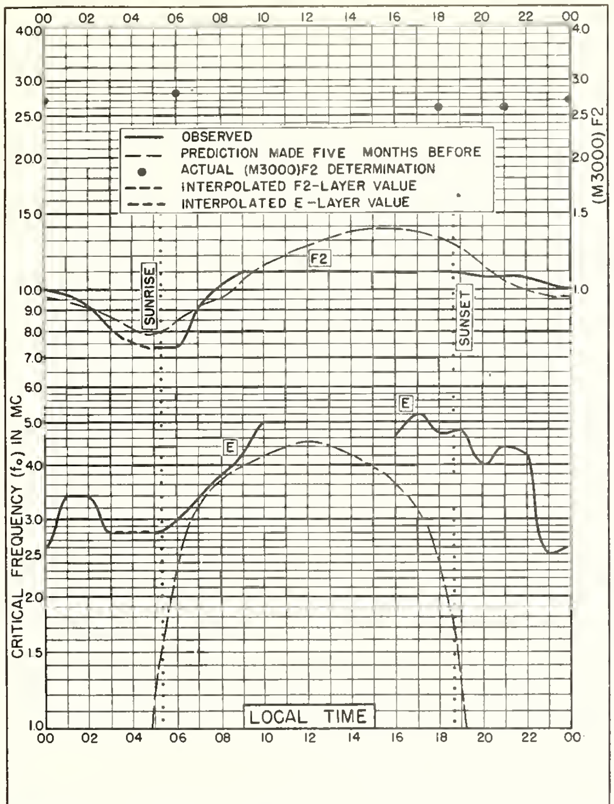

Fig. 69. CALCUTTA, INDIA
22.6°N, 88.4°E
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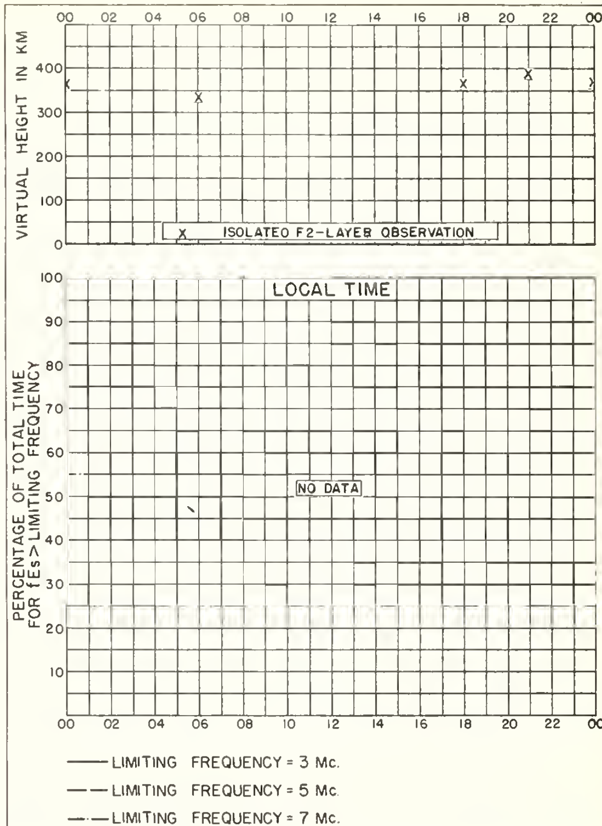

Fig. 70. CALCUTTA, INDIA
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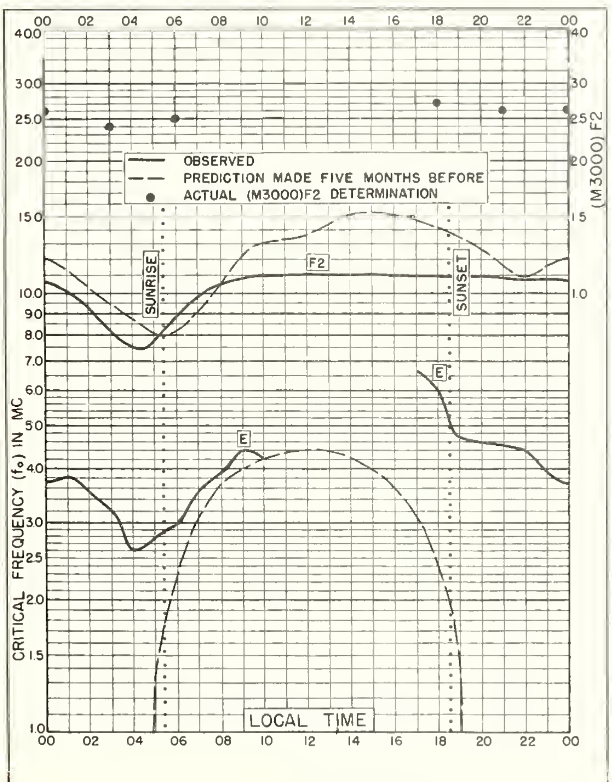

Fig. 71. CALCUTTA, INDIA
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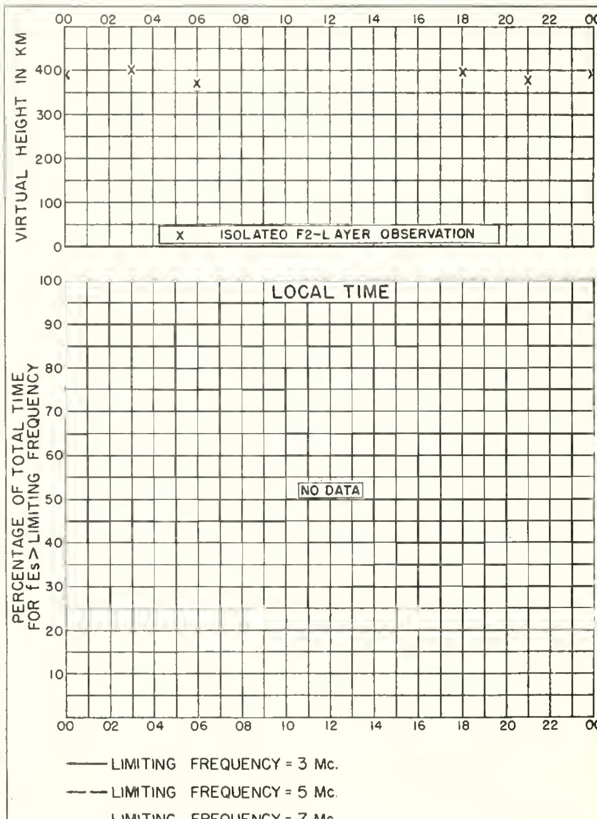

Fig. 72. CALCUTTA, INDIA
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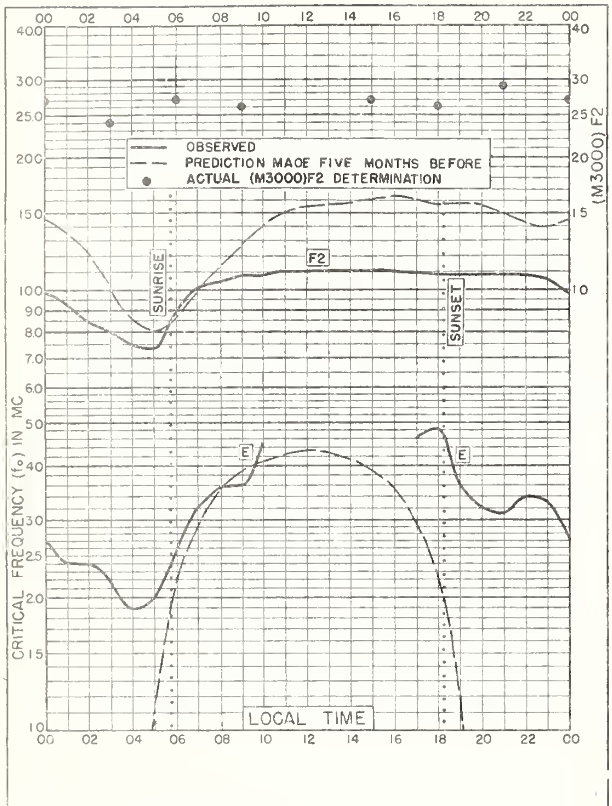

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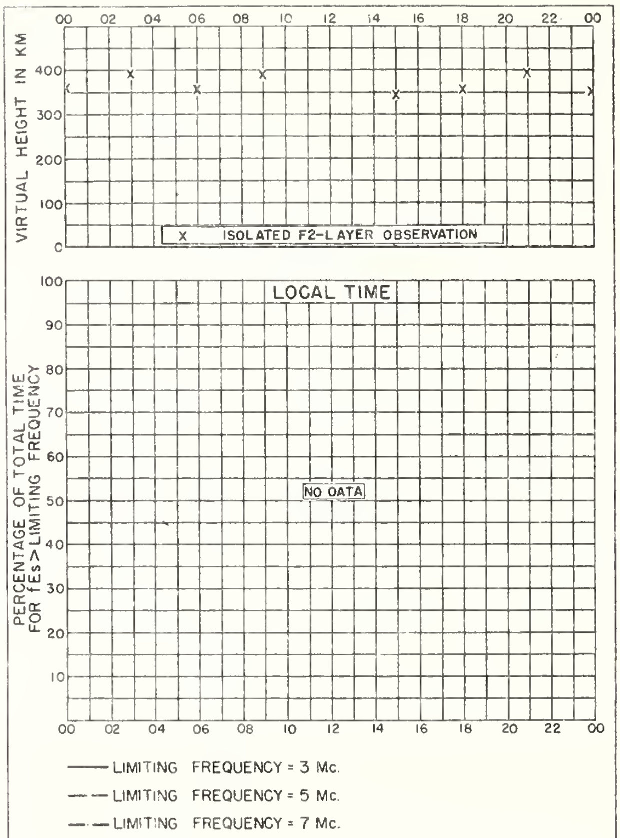


Fig 74. CALCUTTA, INDIA APRIL 1948

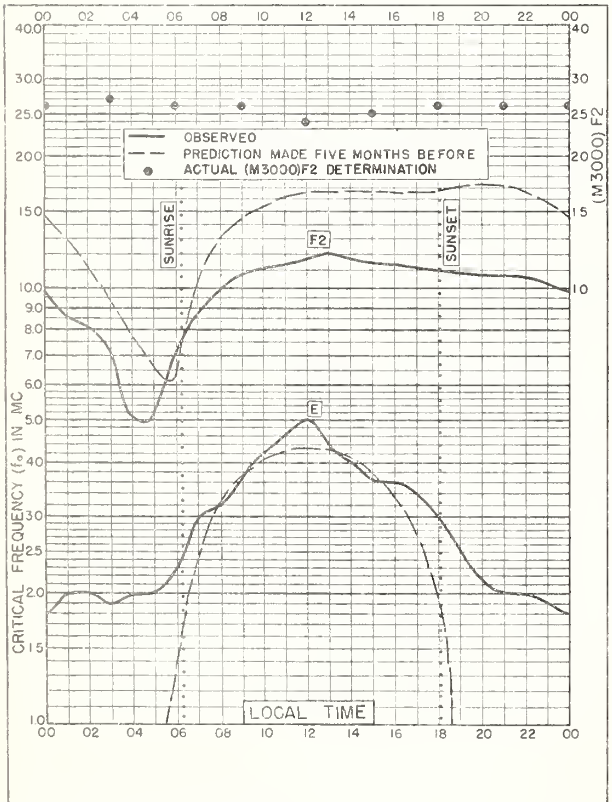
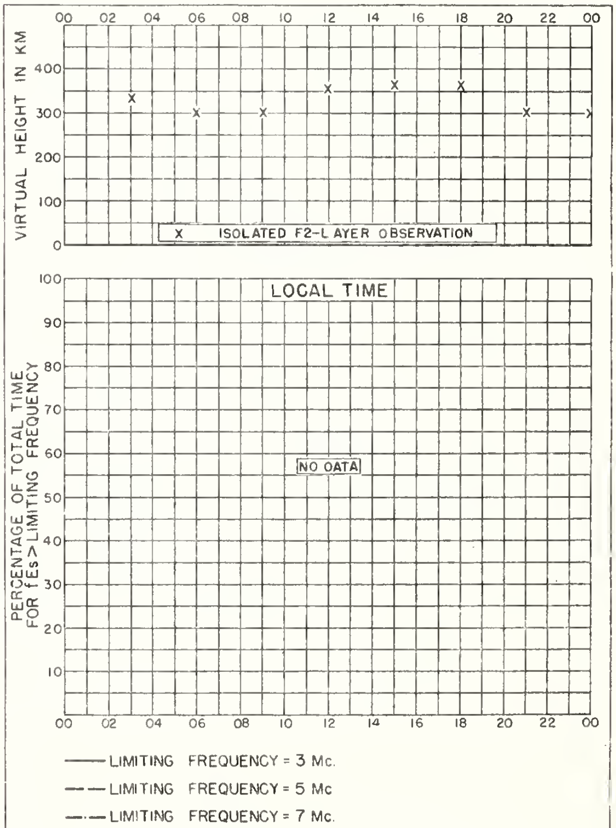


Fig. 75. CALCUTTA, INDIA
22.6°N, 88.4°E MARCH 1948



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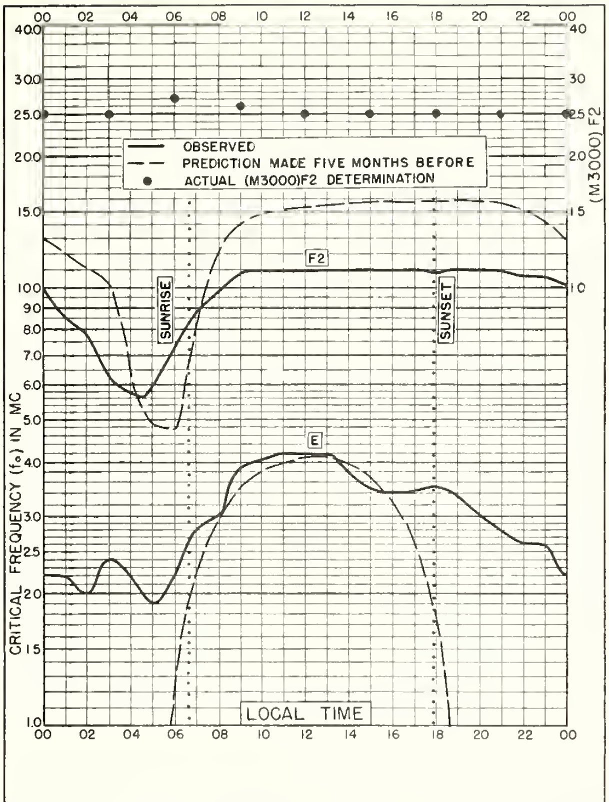

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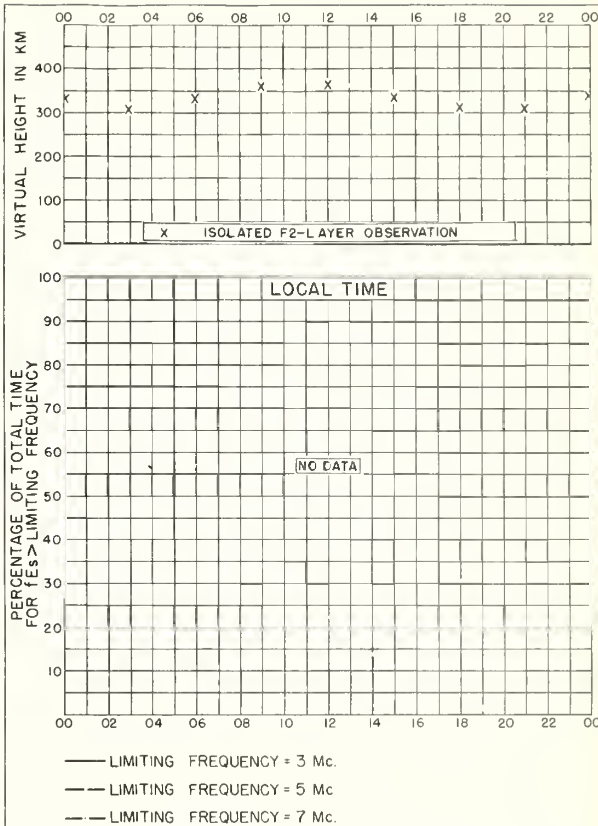

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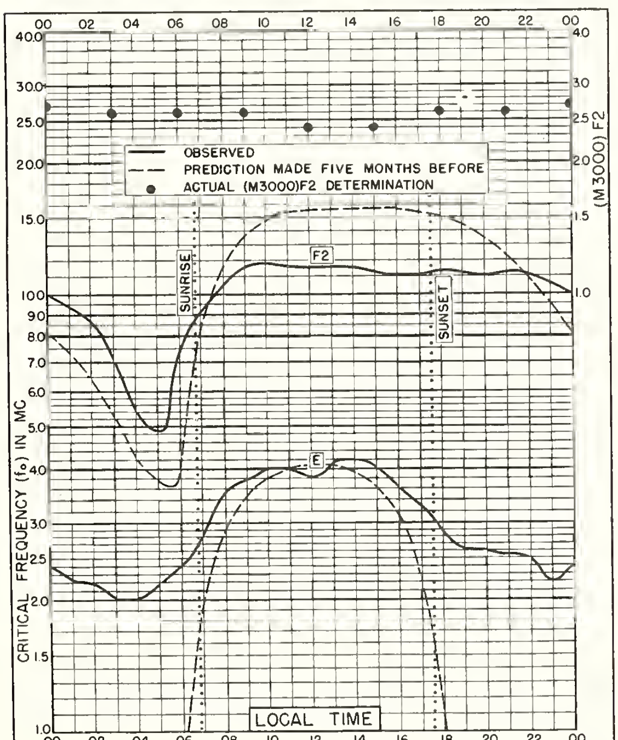

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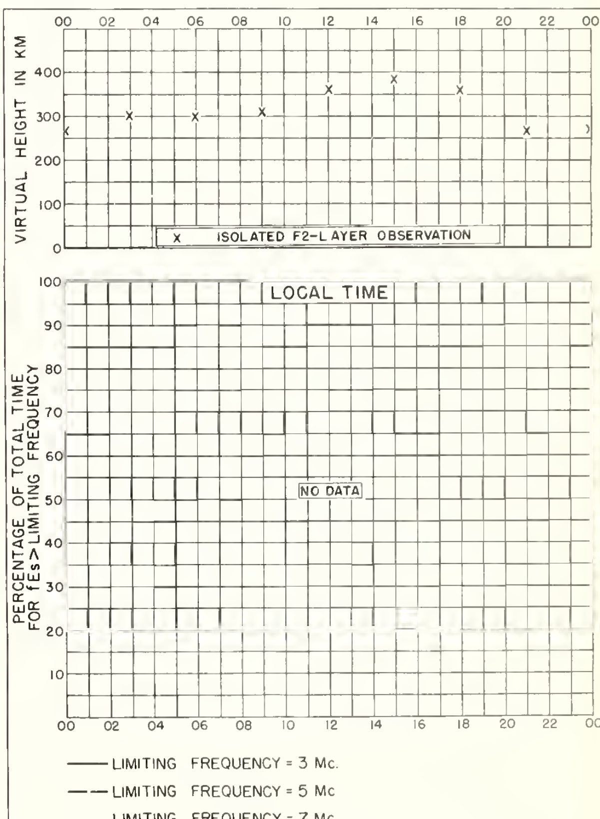
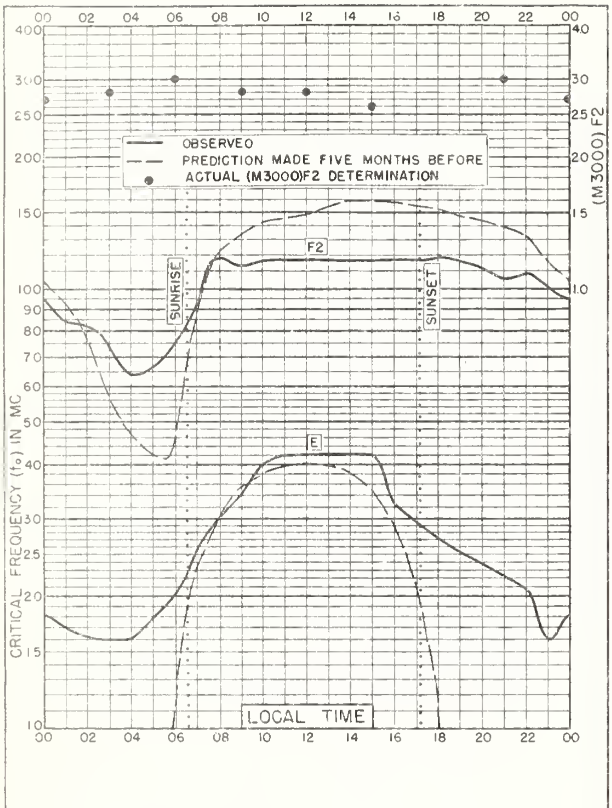


Fig. 80. CALCUTTA, INDIA JANUARY 1948



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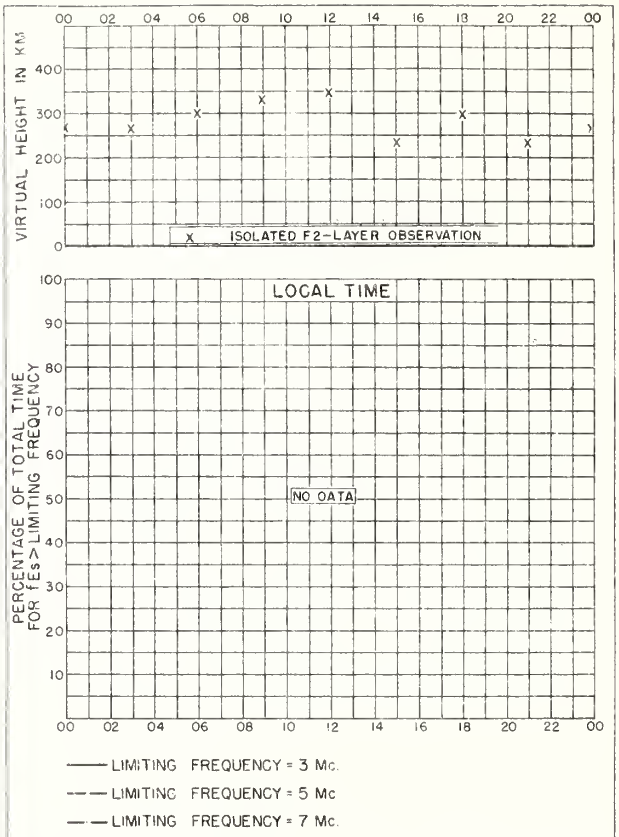
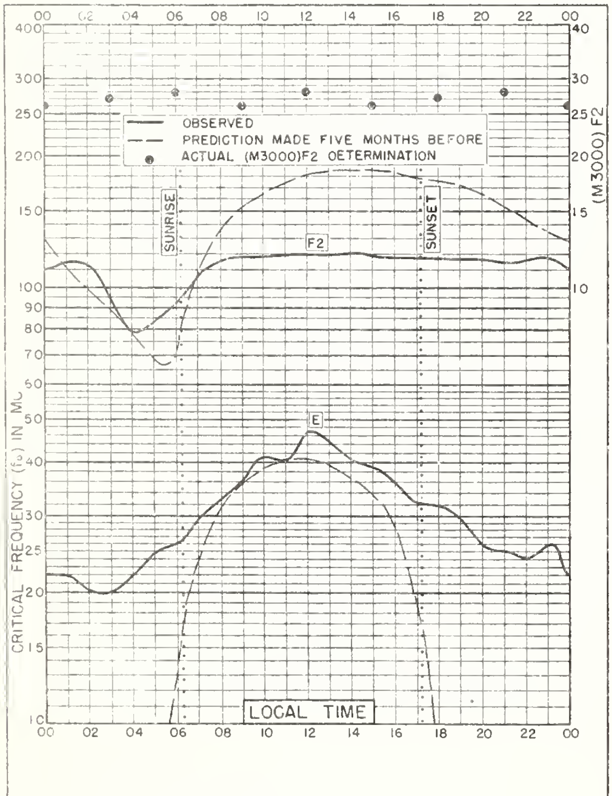


Fig. 82. CALCUTTA, INDIA DECEMBER 1947



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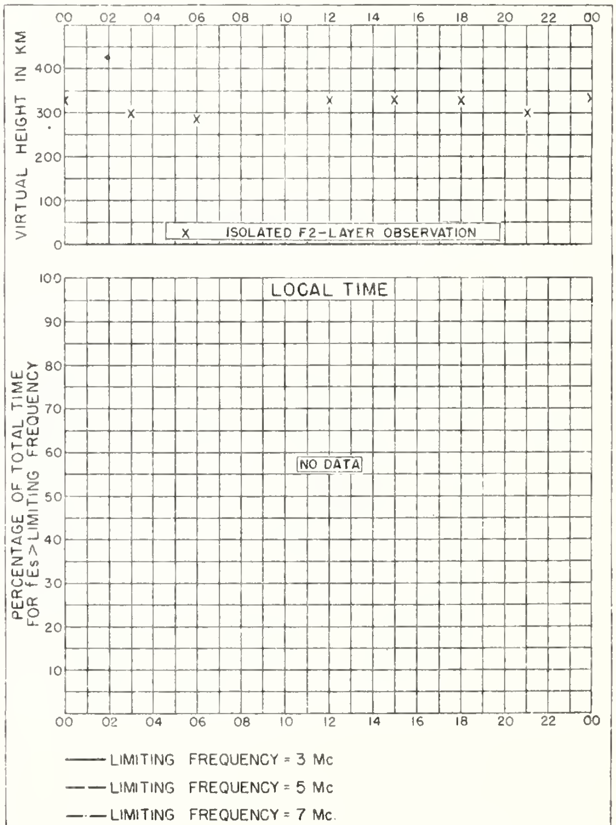


Fig 84. CALCUTTA, INDIA NOVEMBER 1947

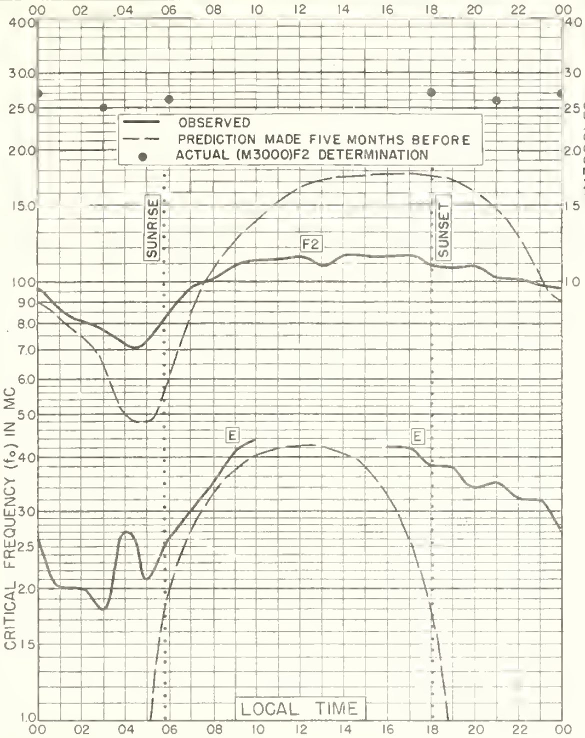


Fig. 85. CALCUTTA, INDIA
22.6°N, 88.4°E SEPTEMBER 1947

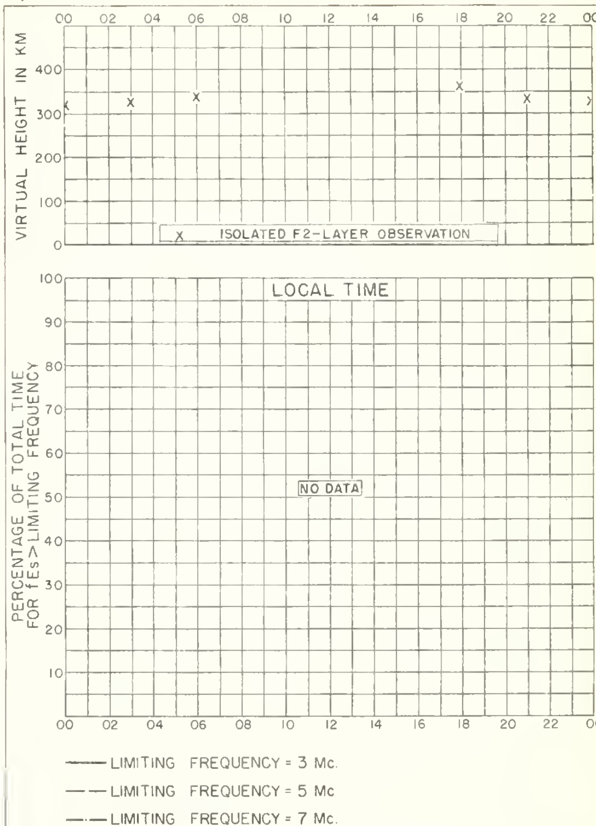
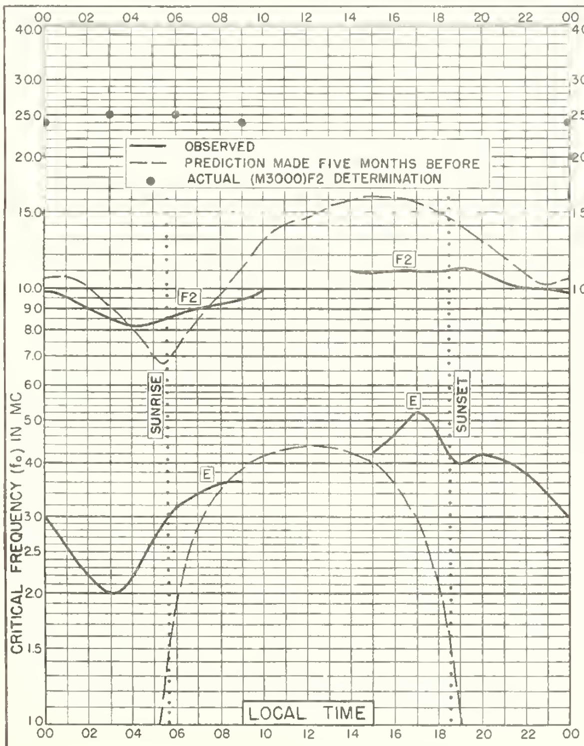


Fig. 86. CALCUTTA, INDIA SEPTEMBER 1947



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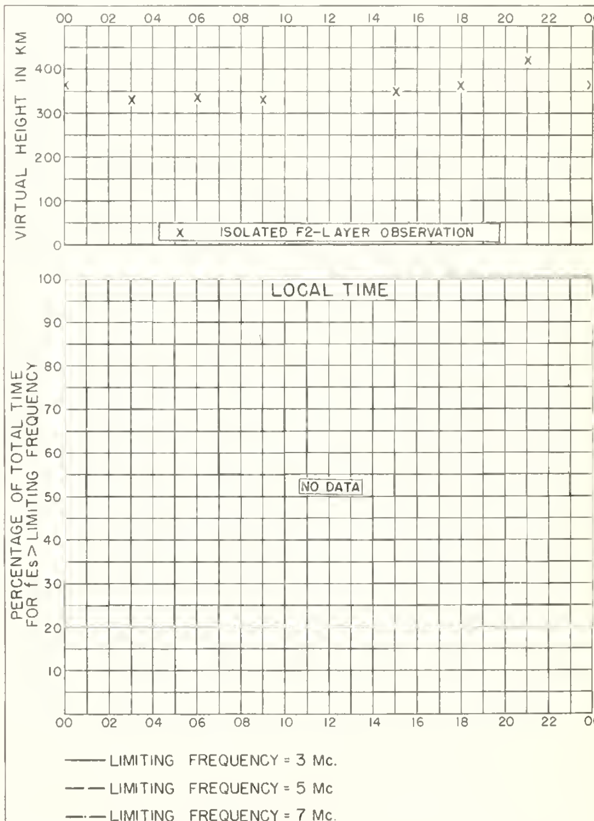

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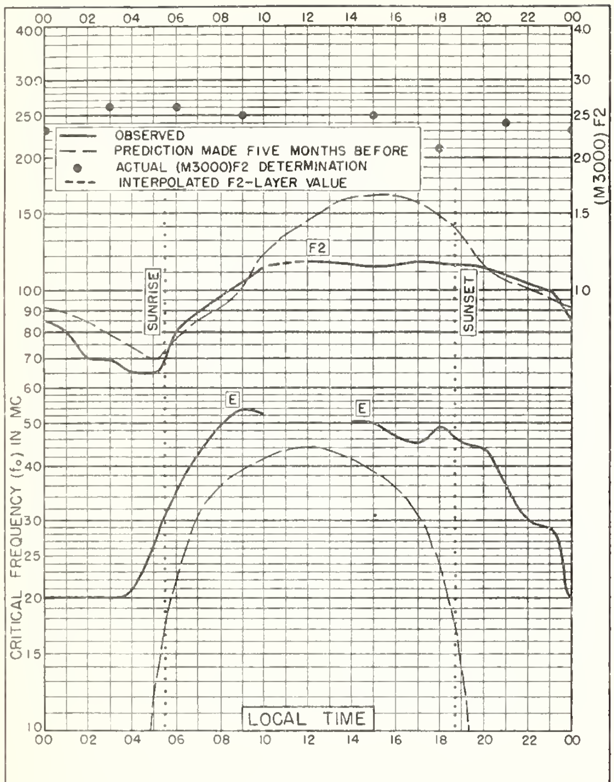

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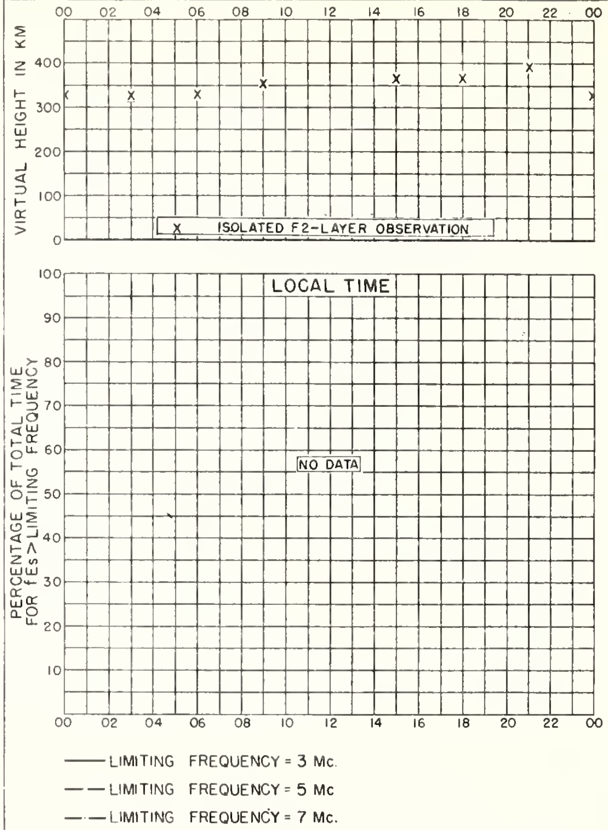
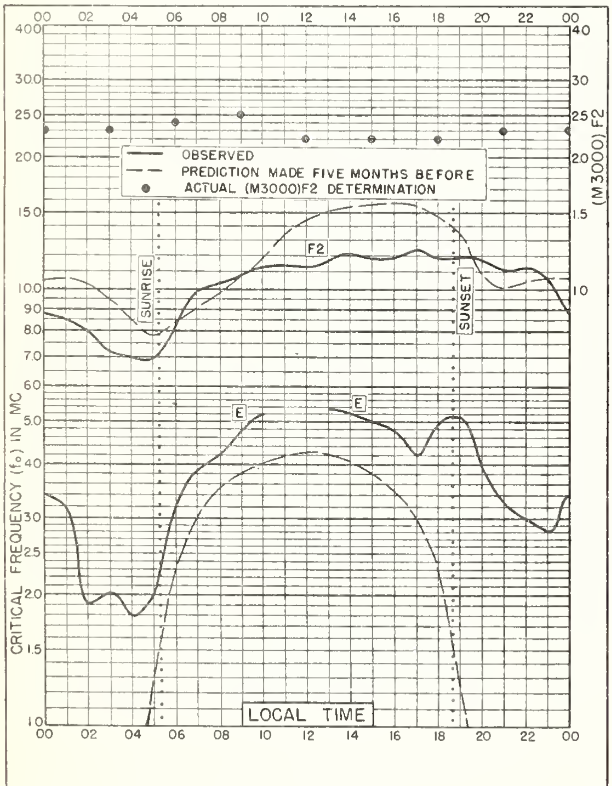


Fig. 90. CALCUTTA, INDIA JULY 1947



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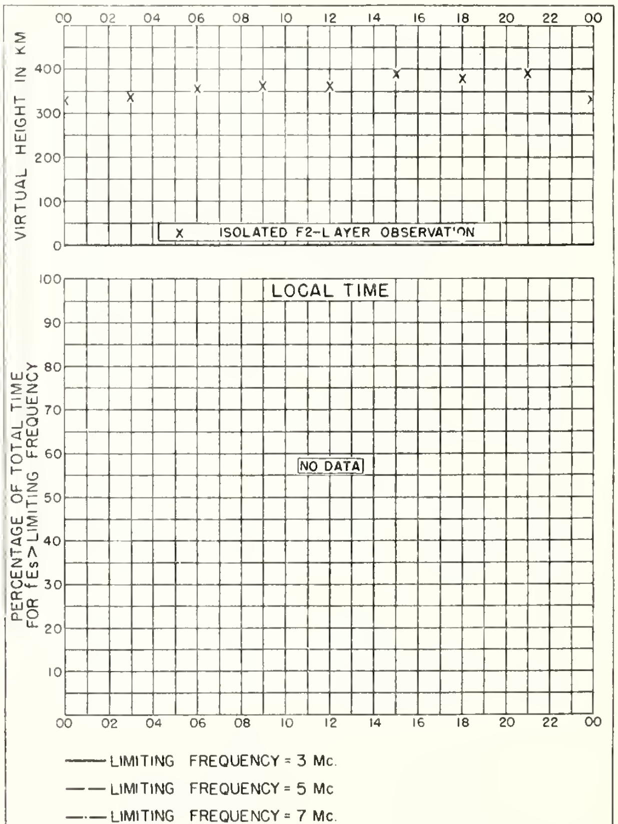

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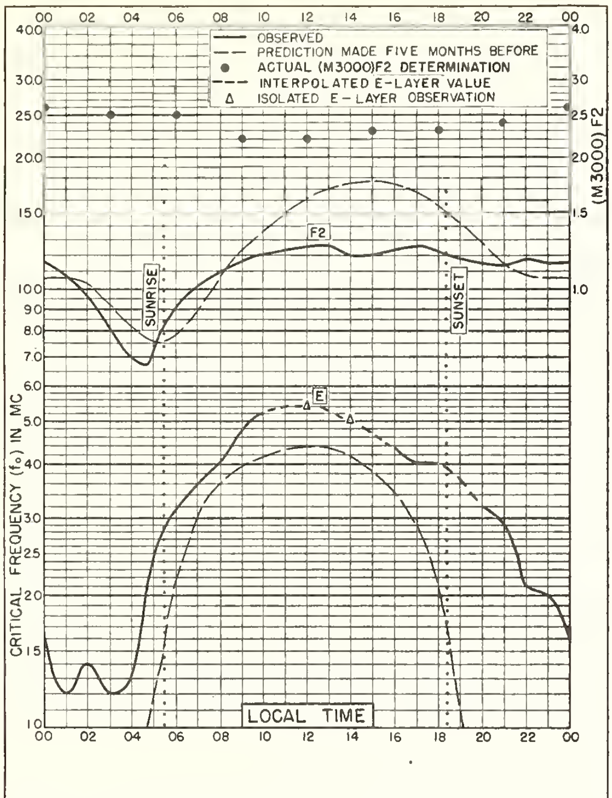

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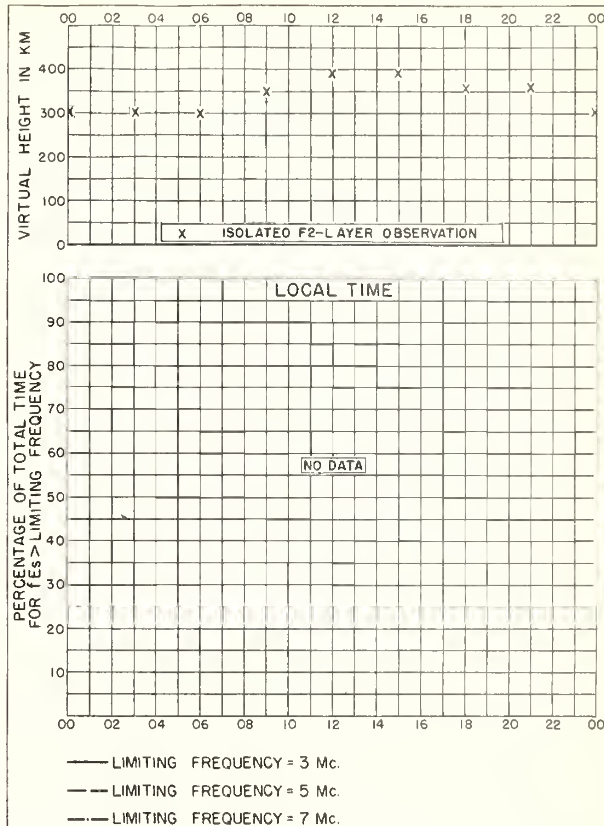

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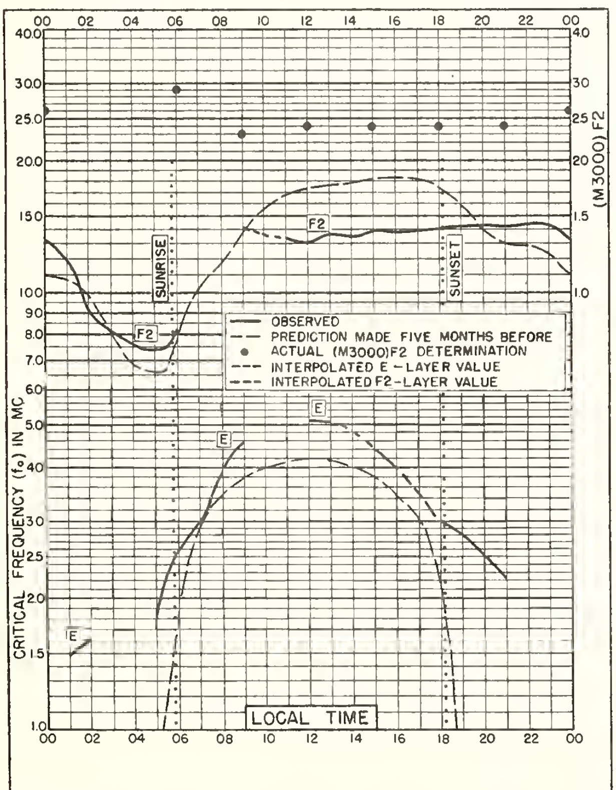

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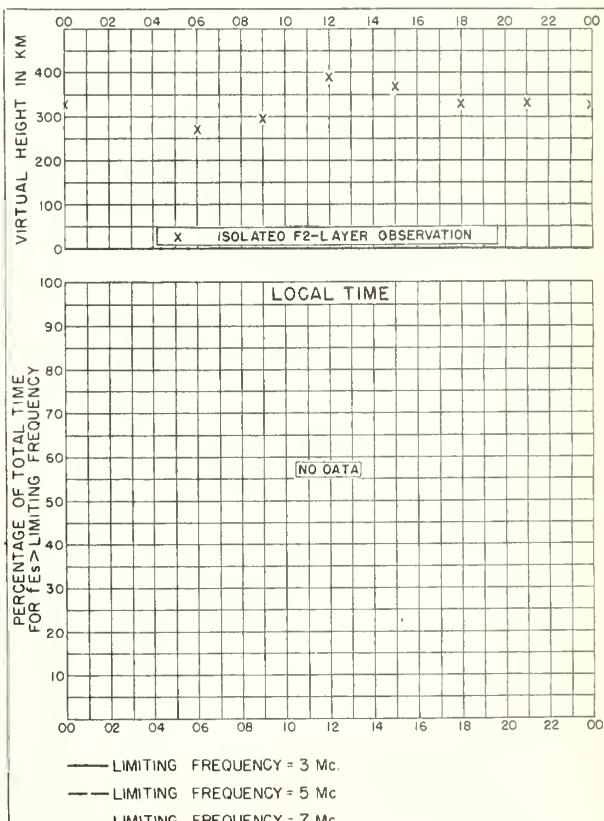

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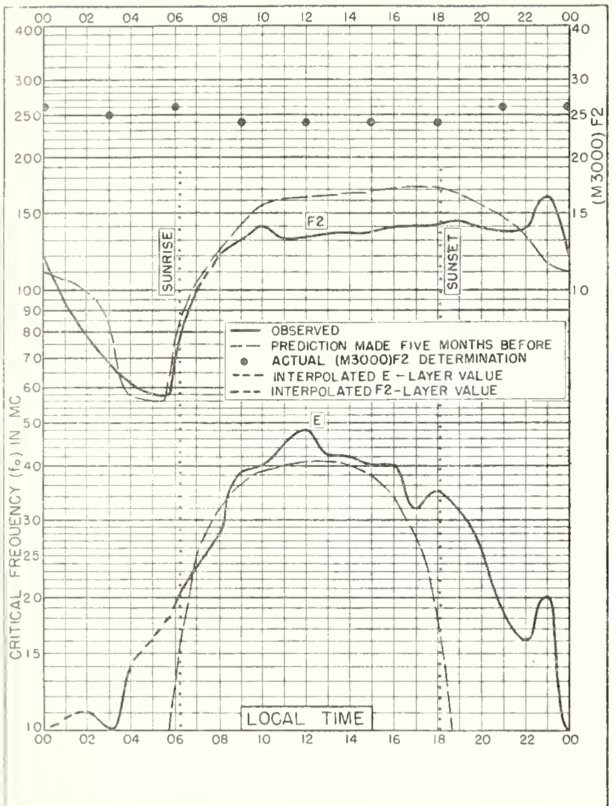

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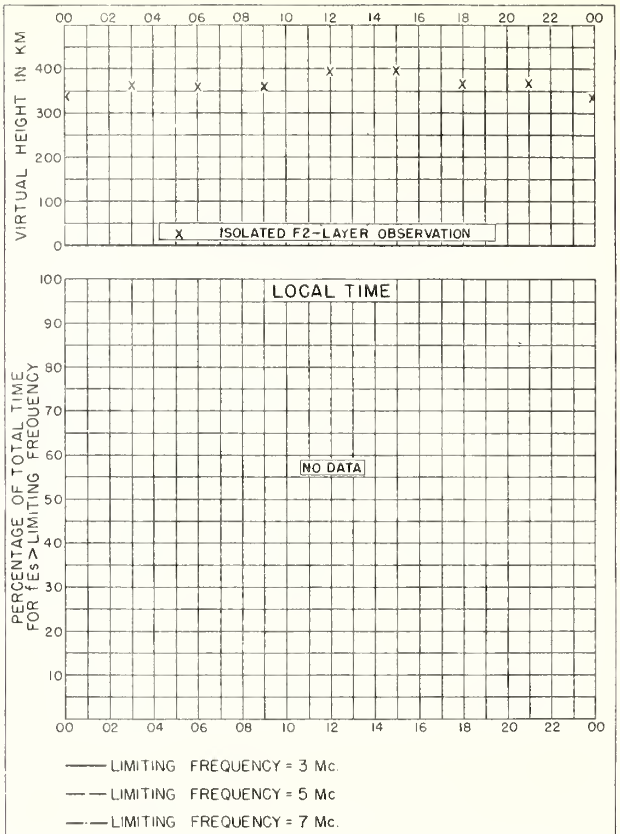

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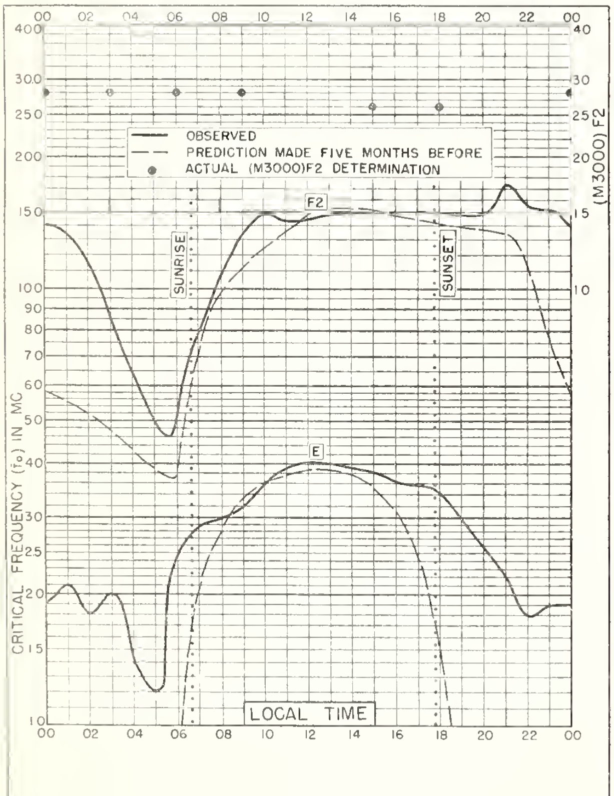

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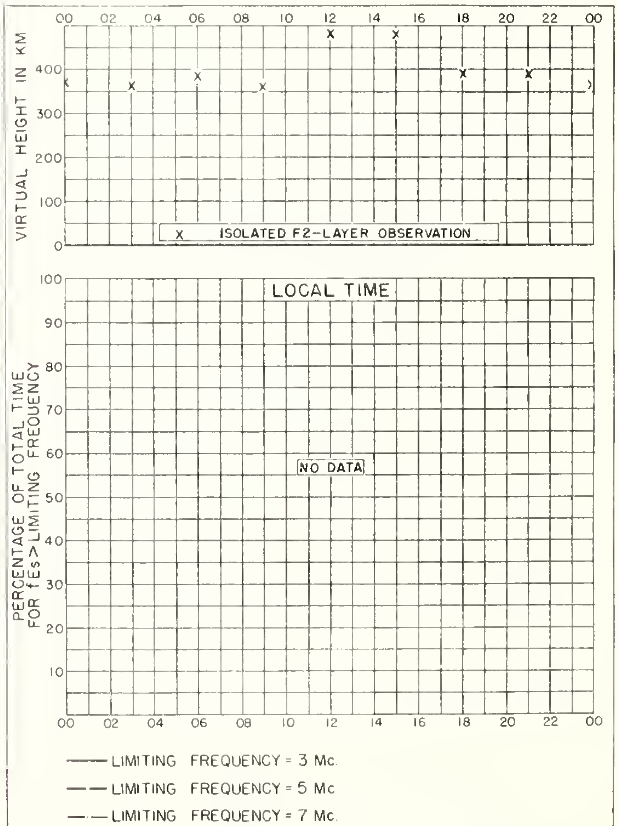

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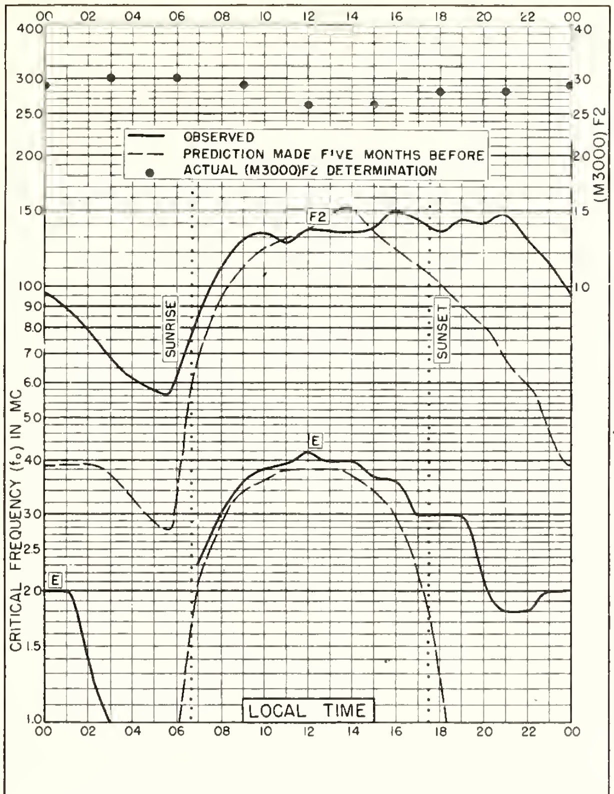

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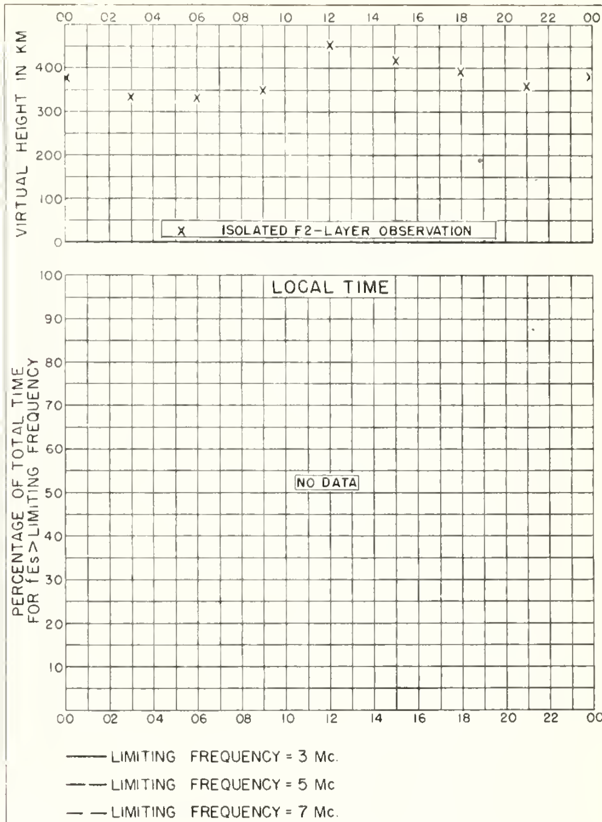

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CRPL and IRPL Reports

[A list of CRPL Section Reports is available from the Central Radio Propagation Laboratory upon request]

Daily:

Radio disturbance warnings, every half hour from broadcast station WWV of the National Bureau of Standards.
Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

Weekly:

CRPL–J. Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:

CRPL–Ja. Semimonthly Frequency Revision Factors for CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL–D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11–499–, monthly supplements to TM 11–499; Dept. of the Navy, DNC–13–1 ( ), monthly supplements to DNC–13–1.)
CRPL–F. Ionospheric Data.

Quarterly:

*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL–H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:

NBS Circular 462. Ionospheric Radio Propagation.
NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:

IRPL–C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.
IRPL–G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.
IRPL–R. Nonscheduled reports:
- R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
- R5. Criteria for Ionospheric Storminess.
- R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.
- R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.
- R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.
- R12. Short Time Variations in Ionospheric Characteristics.
- R14. A Graphical Method for Calculating Ground Reflection Coefficients.
- R15. Predicted Limits for *F*2-layer Radio Transmission Throughout the Solar Cycle.
- R17. Japanese Ionospheric Data—1943.
- R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
- R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
- R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.
- R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.
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- R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.
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- R33. Ionospheric Data on File at IRPL.
- R34. The Interpretation of Recorded Values of *fEs*.
- R35. Comparison of Percentage of Total Time of Second-Multiple *Es* Reflections and That of *fEs* in Excess of 3 Mc.

IRPL–T. Reports on tropospheric propagation:
- T1. Radar operation and weather. (Superseded by JANP 101.)
- T2. Radar coverage and weather. (Superseded by JANP 102.)

CRPL–T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG–5.)

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